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PRINCIPLES OF PERIPHERAL NERVE SURGERY *

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Notwithstanding the amount of experimental work that has been done on peripheral nerves, there is still some difference of opinion among investigators as to their method of repair after injury or division. The complex histology of the nerve fiber and the many different processes occurring or progressing simultaneously in both segments of a divided nerve offer many opportunities for widely different interpretation of findings. If the essential features of nerve repair are understood, the factors that interfere with it can be easily determined by experimental studies or the examination of tissues removed at operation. Therefore, before discussing the principles of peripheral nerve surgery, I will consider the regeneration of peripheral nerves after division.

REGENERATION AFTER DIVISION

When a nerve is divided, definite evidences of regeneration are noted within a few hours in the proximal segment adjacent to the point of injury. Some of these early changes are undoubtedly abortive, but others indicate attempts at definitive repair. Some degenerative changes occur in the neuraxes in the distal end of the proximal segment. These do not, however, extend far back in the nerve, probably only to the next node of Ranvier.

Definitive regeneration of neuraxes occurs only in the proximal segment, and all the neuraxes that eventually neurotize the distal segment passing into the motor end plates and sensory endings develop from those of the proximal segment. By the eighth day after division of a nerve, the medullated fibers of the proximal segment have given off numerous lateral rami some 5 mm. above the point of section. These grow distad beneath the old neurilemmal sheath. The nonmedullated fibers also dissociate into bundles of neurofibrillae which grow down in the old sheaths by the fourteenth day. In studying the repair of nerves through a gap, it can be positively demonstrated that no neurofibrillae can be found in the distal segment until those developing from the proximal segment have bridged the gap. Some still ardently defend the theory of peripheral regeneration of nerves, but all recent evidence shows that the theory of peripheral regeneration is based on studies made when specific stains were not in use or on experiments which were imperfectly or insufficiently controlled.

The changes that occur in the distal segment after division are equally important to those occurring in the proximal. Nerve impulses cannot be transmitted without neuraxes, but the neuraxes cannot reach their terminal distribution unless bands or conduits are formed along which these can pass or creep. Both degenerative and regenerative changes occur in the distal segment after division. The neuraxes soon become broken up. Often they seem to have snapped. Later they break up into fine granules. The myelin breaks up into balls and globules. While these degenerative changes are occurring in the neuraxes and myelin sheaths, definite evidences of growth or repair are noted in the sheath cells. The adult neurilemmal sheath (Schwann) is a fine, thin, structureless membrane provided with a few fusiform nuclei—one to each node of Ranvier, the latter varying from 80 to 900 microns in length.

After division, the sheath cells of both the proximal and distal segments bordering on the traumatized area react early. The first indication of a growth change is indicated by a slight increase in the granular cytoplasm surrounding the nuclei of the sheath cells. This change is observed within from twenty-four to thirty-six hours after division in the cells immediately adjacent to the zone of injury. The cytoplasm increases rapidly in amount, the nuclei undergo mitosis, and by the fourth to the sixth day definite protoplasmic bands have formed. These are narrow strands or bands of protoplasm which contain hyperchromatic nuclei. This growth change, leading to the formation of protoplasmic bands, occurs throughout the distal segment. Certain factors, probably traumatic, greatly accelerate the process in those sheaths bordering on the line of division. The fully formed protoplasmic bands appear later in the peripheral parts of the distal segment than in those adjacent to the line of division.

These bands evidently play an important rôle in nerve regeneration; for the fibers which have no neurilemmal sheaths, such as those of the optic nerve and spinal cord, do not regenerate after division. Kirk and Lewis, in studying regeneration of peripheral nerves after fascial tubulization, could demonstrate these bands passing through and bridging the gap. They seemed to precede the developing neuraxes, forming pathways, as it were, for these as they developed. The neuraxes—the conducting portion of the nerve fiber—develop only from the proximal segment after division of a nerve. The changes in the neurilemmal sheath which occur throughout the distal segment and in the distal part of the proximal segment adjacent to the line of division—the so-called wallerian degeneration—are, however, essential to the definitive regenera-

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tion of the nerve; for without protoplasmic bands, which develop as a result of regenerative changes in the sheath cells, the developing neuraxes do not reach their terminal connections.

HARMFUL EFFECTS OF SCAR TISSUE

In the repair of a divided nerve, the first consideration is to provide easy access for the developing neuraxes to the distal segment. After division of a nerve, a neuroma will develop within nineteen days. Even when there has been no hemorrhage or infection, a neuroma develops. The cut fibers retract within the epineural sheath, and a connective tissue cap forms over the end of the nerve. There is, however, a very marked attempt at repair, for the developing neuraxes as they reach the connective tissue, formed by the cells of the endoneurium and perineurium and surrounding tissues, turn back on themselves to form the spirals described by Perroncito. The neuromas which invariably form after division of a nerve, as demonstrated by Huber and Lewis, are indicative of an attempt at repair which has been thwarted by scar tissue. Some of the developing neuraxes may undoubtedly zigzag through scar tissue and reach the distal segment, but it is doubtful whether they will reach the terminal connections to which they were originally destined.

Scar tissue forming after division of a nerve interferes most seriously with nerve repair. There has been a tendency of late to advise suture by neuroma. There will be but few successes when such a procedure is attempted. In all cases the neuroma should be resected until healthy funiculi appear and to the point where scar tissue is not visible to the naked eye. In many instances even after the neuroma has been resected far back, the funiculi will have a peculiar matted, gelatinous appearance. This appearance is due to small amounts of young connective tissue, developing neuraxes and some edema. The results which have been obtained after suture would seem to indicate that successful nerve repair may be obtained when end-to-end suture is made between funiculi having this appearance.

In examining some neuromas which were resected when suture has been performed, connective tissue septums which equal in diameter the funiculi have been found. In such instances, it would have been easy to approximate funiculi of the distal segment with connective tissue septums of the proximal segment, thus preventing or seriously interfering with nerve repair. I believe it advisable in many cases to employ frozen sections to determine the level to which the resection of neuroma should be carried. Mobilization of the nerve segments and preparation of the nerve ends followed by accurate adjustment require some time, and the frozen sections could be easily made and studied while these procedures were being carried out.

NECESSITY OF PRESERVING THE NERVE PATTERN

Success in peripheral nerve repair depends on accurate anatomic approximation of the two ends. The importance of the internal topography of peripheral nerves should be emphasized. Stoffel has insisted that the funiculi in a mixed nerve have a fairly definite position and that the sensory and motor funiculi, which serve different muscles, maintain their position and relation throughout the entire course of the nerve. He is probably incorrect in the belief that the funiculi maintain a fairly definite relationship throughout the entire length of the nerve, for Langley has demonstrated in peripheral nerves an internal plexus. The internal plexuses apparently serve to collect together the afferent and efferent fibers of the different nerve roots for the areas supplied by the peripheral nerves, just as the brachial and lumbosacral plexuses do for the large areas supplied by the nerve trunks. In the region between the origin of two successive nerves, not arising close together, the bundles are arranged in groups which have little or no connection with one another, although the bundles forming the group are more or less interconnected. Such a region is called an intermediate region, but it gradually blends with the region in which is found the plexus which is formed by the interlacing of fibers or bundles given off from the nerves or bundles of the intermediate zone. Langley's work agrees with that of Dustin, who described an interlacing of nerves or bundles between the funiculi of peripheral nerves at points where branches are given off.

As far as the surgery of peripheral nerves is concerned, Stoffel's and Langley's work, although differing in detail, emphasizes the importance of nonaxial rotation of nerve trunks during suture, thus avoiding distortion of the nerve pattern. Distortion of the nerve pattern may interfere seriously with the nerve supply of muscles. If the nerve pattern is distorted, reeducation of muscles or readjustment becomes necessary. If the nerve pattern is distorted, the developing neuraxes may not reach the muscles for which they were originally intended, or neuraxes which originally served motor function may be diverted to the skin. In some instances after suture, even when care is exercised, the neuraxes may make proper functional nerve endings; but the central connections may be different from those existing before the suture was performed. In such instances a readjustment of impulses or a degeneration of these fibers must occur before coordinated movements can be made.

I have attempted without any great success to perform funicular suture. This is the object to be desired, but I believe it impossible. As perfect anatomic repair as is possible should, however, be secured in order to preserve the nerve pattern. The surgeon who makes the most perfect anatomic repair will, other things being equal, have the greatest number of successes.

It is often difficult to determine whether or not rotation has occurred or the amount of rotation, if such has occurred. This is especially true when the nerve has been divided by a missile, for the nerve after division may be rotated or displaced by the force continuing to act. When the nerve is exposed, fine silk sutures may be inserted on both sides of the nerve before it is lifted from its bed. These serve as guides to determine the exact position of the nerve segment when suture is attempted. Mosquito forceps may be used for the same purpose, but they are not so easily handled and may cause more injury to the nerve.

If, after suture, fibers originally destined for a certain group of muscles become partly distributed to their own group and partly to those of another group, marked incoordination of movements may occur. The movements are then no longer precise. They are awkward and without force. This is often seen after suture of the radial nerve, when the supinator longus contracts more forcibly when attempts are made to use the extensors of the wrist, than when the forearm is flexed on the arm. In this instance some of the fibers which

should have been distributed to the radial extensors have reached the supinator longus.

Accurate approximation will prevent to a great extent this imperfect redistribution of developing neuraxes. An imperfect redistribution occurs to some slight extent after every suture, but the results are overcome by reeducation or some degeneration of the fibers which have made wrong terminal connections.

IMPORTANCE OF EARLY SUTURE

The length of time intervening between the division of the nerve and repair is the third important factor in determining the success of nerve suture. Those cases in which nerve suture is performed early, in which the period between the injury and the operation does not exceed three or three and one-half months, have a much higher percentage of recoveries than those in which the suture is performed later. Some time ago I reviewed the statistics of nerve suture, and it seemed to me that suture performed as late as nine months after the injury presented a much lower percentage of recoveries than suture performed earlier.

I have had the opportunity of observing eleven cases in which primary suture was performed. Nine months after suture, nine of these presented definite evidence of return of motor function. These cases could be spoken of as cured. The importance of the time element cannot be emphasized too strongly, for there is a tendency in civil practice to delay operation in hopes that improvement may occur if massage, electricity, etc., are continued long and faithfully. Supplementary movements which are not dependent on regeneration of the injured nerve are often regarded as evidences of recovery. These movements should be carefully studied, for operative interference should not be delayed because of the mistake of interpreting these movements as evidence of return of function in the paralyzed group of muscles. Early exploration is advisable in many of these cases, for the secondary changes occurring in the nerve often render suture difficult after a delay of many months, and the changes which occur in the muscles, tendons and joints may cause more or less permanent disability.

END-TO-END SUTURE

I have wished to emphasize the harmful influence of scar tissue on nerve regeneration, the necessity of preserving the nerve pattern, and the importance of early suture. These are important things in peripheral nerve surgery. The method of applying the suture in end-to-end anastomosis is simple.

End-to-end suture is the only procedure that can be relied on to reestablish the continuity and function of a nerve after division. It makes no difference concerning the suture material, for fine silk or catgut gives equally favorable results. Transfixion sutures do not seem to disturb the nerve pattern, but I believe that epineural sutures are the most satisfactory. In cases in which some traction must be exerted, it may be necessary to employ one or more transfixion sutures.

The sutures should be applied so that the epineurium is closed, thus preventing straying of neurofibrillae in surrounding tissues. The ends should be approximated without pressure. It has been advised by some that a small gap be left. I believe that this is poor advice, although one can see the reason for it after examining neuromas which have been removed when the suture was performed. In some cases the scar tissue surrounding a funiculus equals in diameter the funiculus itself. In such cases it might be difficult to avoid approximation of the funiculi in one segment with the scar tissue in the other. If a small gap were left it might be easier for the neuraxes to find their way into the protoplasmic bands of the distal segment. Resection of the neuroma far enough back to expose healthy neuraxes is necessary if peripheral nerve suture is to be successful.

Mobilization of the segments will often permit of end-to-end suture even when the defect is long, especially when combined with displacement of the nerves and change in the position of the part. Dissection of a nerve from its bed apparently does not interfere with regeneration, for recovery within the time expected after suture occurs when, for example, the sciatic is dissected out of its bed for considerable distance. As one's experience in peripheral nerve surgery increases, the attempts at end-to-end suture even in long defects become more and more successful. In the cases in which the defect is so long that end-to-end suture is impossible, many procedures have been suggested. No one of these can be depended on to give results.

CABLE TRANSPLANTS

Experimentally, auto and homo-cable transplants will conduct neuraxes from the proximal to the distal segments. Fascial tubes can also be used with success experimentally.

The results obtained by Platt in clinical surgery when these procedures are employed are not encouraging. They suggest either that the results obtained experimentally cannot be applied directly to clinical surgery or that our technic is at fault in this work.

Platt's conclusions are as follows:

1. In eighteen operations in which fascial tubulization combined with autogenous nerve grafts, fascial tubulization alone and autogenous vein tubulization (one case) were used, there was a complete absence of any clinical sign of recovery. The shortest period over which observations were made was four months, the longest period twenty-six months.

2. Secondary exploration in four cases showed complete silence of the nerve trunk to direct faradic stimulation. End-to-end suture was accomplished in all after exsection of the bridged segment.

3. At the reexploration operations, partial or complete obliteration of the lumen of the fascial tube was noted.

4. In two specimens examined histologically, one, a tubulization alone, showed obliteration of the lumen of the tube by fibrous tissue in which no nerve fibers could be found. In the second, a graft and tubulization combined, nerve fibers were present in the center of the obliterated tube eighteen months after the operation. There was no sign of continuity between the proximal and distal ends through this strand of nerve fibers.

5. The early reexploration of all graft and fascial bridge operations is advisable.

In 120 operations I used auto cable transplants twelve times and performed tubulization with fascia six times. In none of these has there been recovery, although in two transplantations there has been some slight return of motor power in isolated muscles. The striking thing, however, is that the transplant may increase markedly in size. I believe that these cases

should be explored after a reasonable time as a block to the developing neuraxes may occur at the junction of the transplant and the distal segment. Resection and suture at this point might favor the downgrowth of neuraxes and neurotization of the distal segment.

PROCEDURE WITH PHYSIOLOGIC INTERRUPTION

The group of nerve injuries in which there is no anatomic division but a physiologic interruption of nerve impulse offers some interesting problems. The pathology varies considerably. Constricting bands, thickened epineurium, bony callus and cicatricial nodules within the nerve resulting from intraneural hemorrhage and proliferation of intraneural connective tissues are the conditions most frequently found.

Not all are agreed as to the procedure to be followed. In some cases, however, the indications are well defined. Tinel has stated that neurolysis is permissible only when it restores a free, supple nerve, in the interior of which is found no obstacle to regeneration, and that as a whole liberation is ineffective in cases of severe lesion of nerve trunks associated with rupture of the sheath, and the development of scar tissue with the formation of a neuroma. In these cases the cicatricial tissue is either permeable to regenerating axis cylinders, in which case intervention is useless, or the obstacle does not permit of the passage of axis cylinders, and an operation such as neurolysis will not make it permeable. Neurolysis is of distinct value, but it is sometimes difficult to determine whether or not the results are the direct results of surgical intervention, for many of the patients recover spontaneously. The value of the operation cannot be denied, however, in those cases in which paralysis has existed for months and in which a distinct return of motor power occurs within ten days following the operation. Nerves which present the least macroscopic change may have the greatest alteration in or suspension of function. This is observed especially in those cases in which a number of nerves, some of which have recovered spontaneously, have been affected. When the operation is performed it may be found that the nerves presenting the most marked pathologic changes are the ones that have recovered spontaneously.

Whether neurolysis or resection is to be performed depends on the appearance and feel of the nerve and the electrical reaction. The time element is important in determining the results after neurolysis, that is, the time existing between the injury and the operation. Statistics dealing with a large number of nerve injuries compiled by a number of different surgeons indicate the importance of the time element. The greatest number of improvements, from 80 to 100 per cent., are noted in cases in which this operation is performed within five months after the injury. When the operations were performed eight or nine months after the injury, improvement was noted in but from 30 to 70 per cent. In thirty-nine cases in which neurolysis was performed within six months after the injury, improvement was noted in 58.9 per cent., while in 100 cases in which a year had elapsed before the operation, improvement was noted in but 28 per cent. Patients operated on ten months or more after injury had the lowest percentage of improvement. There is, however, no relation between the amount of improvement and the time at which it begins after this operation, for many of the patients who improve the most are those who begin to improve some time after operation.

Endoneurolysis, in which the separate funiculi are exposed and freed of scar tissue, is technically somewhat difficult. While there may be no increased disability as the result of such an operation—even some improvement—the end-results are usually not much of an improvement over the condition existing before the operation, for scar tissue tends to reform within the nerve.

Neurolysis is frequently combined with capsulectomy —removal of the thickened epineurium—or parallel incision of it. Injection of the nerve with a solution of procain, as suggested by Hofmeister, is employed by many now in preference to endoneurolysis.

A number of methods have been suggested to prevent the reformation of scar tissue after neurolysis. Whenever possible, and it is possible in the majority of cases, the liberated nerves should be placed between uninjured muscles. Even in large wounds with a great deal of scar tissue it is possible to displace muscles so that a new bed can be formed for the liberated nerve. Liberated nerves should not be placed in contact with cut muscle fibers, for the adhesions which then form may seriously interfere with the conduction of the nerve impulse.

Cargile membrane is the next choice. Fascia cannot be used for this purpose to advantage, for when placed in contact with scar tissue it becomes invaded by and converted into scar tissue. I have reoperated in three cases in which a free fat transplant has been used for neurolysis. The fat had disappeared from all, and in the place of the transplant were adhesions. These were delicate, but delicate adhesions frequently seriously interfere with nerve conduction.

RECOVERY OF FUNCTION

Following suture, nerves recover function in a fairly definite order as regards time. The musculocutaneous nerve in the arm recovers rapidly and completely. The musculospiral nerve recovers early. Distinct return of motor power in the supinator longus and radial extensors of the wrist is frequently observed within five and a half months after suture. Seventy per cent. of the cases of musculospiral suture present very definite evidences of recovery when followed for some time. Favorable results are obtained after suture at almost any level. The results are not dependent on whether the nerve is sutured above the clavicle, just above its entrance into the radial groove on the inner side of the arm, or on the outer side of the arm between the supinator longus and brachialis anticus. The internal popliteal (tibial portion of the sciatic) comes next in order of frequency and rapidity of recovery. A longer time is required for recovery than after suture of the musculospiral. Thirty-three per cent. or slightly more recover fair function after six months. At the end of nine months, 66 per cent. may present definite evidences of return of function. The median nerve repairs fairly rapidly and comes next in order. Contractures of the thumb and index fingers with accompanying joint changes may seriously interfere with complete restoration of function and prolong disability. In my experience the external popliteal recovers most slowly after suture. Even those patients on whom the suture is performed low down recover slowly. A large percentage do, however, recover after some time. I have observed one case of external popliteal suture in which return of function (motor) was fairly complete at the end of six months.

Peripheral nerves have great regenerative power. The procedures that are necessary to the establishment of repair are plainly indicated by clinical and experimental studies and the histologic examination of specimens. Changes occurring in muscles and joints which develop during repair unless prevented or corrected will defeat the purpose of the operation. Careful and assiduous after-treatment is necessary. There should be the closest cooperation between the physiotherapist and the surgeon. Nerve injuries occurring in civil practice should be operated on earlier than they are. Time is lost waiting for evidences of return of function. Secondary changes occurring in the nerve during this time may render the operation difficult, often unsatisfactory, and the changes which occur in the muscles and joints may increase and prolong the disability.

Early exploration after nerve injuries with loss of function of the muscles supplied by the nerve affected is advisable, for the condition of the nerve (anatomic division or physiologic interruption) can be determined and steps taken to promote an early return of function. Results in nerve surgery grow progressively worse with delay.

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CLINICAL EXPERIENCE WITH A STANDARDIZED DRIED AQUEOUS EXTRACT OF DIGITALIS *

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That digitalis to be effective must be given in sufficient dosage to produce demonstrable effects has been well known since the original directions for the use of the drug were given by Withering. How far short of these instructions the general profession had fallen is a sad commentary. Chiefly through the work of Eggleston,[1] it has been demonstrated that within reasonable limits the amount of digitalis necessary to produce physiologic effects can be calculated on a basis of the patient's weight, and that the administration can be carried on rapidly up to this point. Robinson [2] has gone a step farther and has shown that under proper control this calculated amount of digitalis can be given in a single dose and effects obtained in from twenty-four to thirty-six hours that under the ordinary methods of administration would require from five to six days or even longer. Those who have witnessed the remarkable effect of a large single dose of digitalis when given to a patient with acute symptoms of heart failure must have been impressed with the great value of rapid digitalization as a time saver to the patient and to the clinic.

In order to give digitalis properly and especially rapidly, it is essential that the potency of the preparation in use be known. It is to be hoped that soon physicians generally will prescribe digitalis in terms of physiologic units, instead of the usual drops, cubic centimeters or grams. One immediately encounters the difficulty of obtaining preparations of constant or even known strength. Few clinicians have available the material or skill for assaying the drug they must use in so many important cases. The Pharmacopeia has set a standard for the minimum activity of acceptable leaf, yet this does not solve the problem entirely, since wide variations in potency are found above this minimum required.[3] In spite of this requirement, much of the digitalis on the market today is below standard, while occasional samples are found considerably above the pharmacopeial strength. It is further difficult to judge without making actual assays how much the original leaf or the preparation may have deteriorated in strength before the drug comes into the hands of the physician.

In an effort to meet this problem, one of us has developed in the laboratories of the Harvard Medical School a preparation which has been used in the treatment of cardiac patients in the medical wards of the Peter Bent Brigham Hospital and in private consultation work for the last year. It is a dried, aqueous extract, prepared essentially as follows: A 1 per cent. infusion is made and filtered and immediately evaporated to dryness over a water bath at a temperature not exceeding 80 C. The residue is a fine brown powder that is easily handled. It is quite deliquescent, but with care can be kept perfectly dry. Each lot is tested for potency by physiologic assay. For the most part the frog method has been used, the standard recognized by the Pharmacopeia. The powder is mixed with anhydrous sodium sulphate in amounts depending on the strength of the original leaf, never using more than equal parts. This in no way detracts from the usefulness of the preparation, and materially aids in preserving dryness. It is then made up to weight if necessary with lactose so that 1 gm. of the final product represents 1 gm. of a leaf of pharmacopeial strength, that is, 0.6 mg. per gram of frog weight is just sufficient to cause systolic standstill of the heart in sixty minutes. The powder is most conveniently dispensed in capsules of 0.1 gm. each. The capsules protect the patient from the bitter digitalis taste, and also aid in protecting the powder from moisture, thus contributing to its stability. The oldest sample has maintained its activity for a year. This gives, then, a stable preparation of constant potency of pharmacopeial standard. It should be emphasized that the preparation must be kept dry. It has been found that if the extract is allowed to take up moisture, it may show marked deterioration in three months' time.

The extract has been given to fifty-five patients under all the varying circumstances seen in the medical wards of a general hospital. The results, judged on the basis of digitalis medication in general, have been uniformly satisfactory. Whenever practicable for purposes of this study, the patients entering because of symptoms of heart failure were put at absolute rest and given the advantage of all therapeutic procedures excepting digitalis. This was withheld until the

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Eggleston, Cary: Digitalis Dosage, Arch. Int. Med. 16:1 (July) 1915.
2. Robinson, G. C.: Am. J. M. Sc. 159:121 (Jan.) 1920.
3. Pratt, J. H., and Morrison, Hyman: The Activity of American Digitalis, J. A. M. A. 73:1606 (Nov. 22) 1919.

patient seemed to have reached more or less of a level of improvement, or persisting or increasing symptoms made it seem unwise or unfair to withhold the drug longer. If it could be definitely ascertained that he had not been receiving digitalis within three weeks or more before coming to the hospital, massive doses, in the majority of instances single doses, of the extract were given. It was soon found, by giving divided doses rather rapidly, that 30 mg. per kilogram of body weight very closely approximated the dose from which physiologic effects might be expected. With those patients to whom it seemed unwise to give large doses because of previous digitalis medication or doubtful histories in this regard, the usual method of giving repeated small doses was employed. The usual effect, consisting of gradual slowing of the heart in fibrillating cases, gradual loss of edema, etc., was seen. In many instances the total amount of the drug required was larger than the calculated dose. In general, the amount in excess seemed to depend on the rapidity of administration. Pardee [4] has estimated that with one particular tincture, 1.5 c.c. of which equaled 1 cat unit, there was a daily elimination or destruction equivalent 1 gm. of the extract during the first twenty-four hours after admission, without a preliminary rest. It was then continued in smaller doses over a period of ten days until a total of 4.2 gm. had been given. During the first five days he received 3.4 gm., 1.1 gm. in excess of the calculated dose that would have been expected to be effective if given at once. This case illustrates very well an effective method of giving digitalis in practice when the patient is not under constant observation.

The records of twelve patients showing fibrillation of the auricles who received effective large doses on a single day were selected as having been sufficiently well controlled to make comparison of value, and because in these patients the changes in heart rate give such good objective evidence of digitalis effect. The average total dose varied from 1.4 to 2.2 gm. The dose per kilogram of body weight, calculated on the lowest weight of each patient as obtained after the disappearance of edema, varied from 27 to 38.9 mg., with an average of 30.4 mg. These results are tabulated herewith. Taking 30 mg. per kilogram as an average therapeutic dose, it is seen that in this series the variation

DOSAGE AND RESULTS IN PATIENTS WITH AURICULAR FIBRILLATION

Patient	Age	Weight Greatest, Kg.	Weight Lowest, Kg.	Day of Treatment	Dose Total, Gm.	Dose Per Kilogram,* Gm.	Time of Full Effect, Hours	Evidences of Effect
J. M. C.	54	73.6	70.4	5th	1.8	0.030	16	Slowing of heart with loss of pulse deficit
W. H. C.	62	74.4	74.0	3d	2.2	0.030	24	Slowing of heart with loss of deficit; decreased dyspnea and cyanosis
A. W.	65	58.0	55.2	3d	1.5	0.027	24	Slowing of heart; diuresis
A. L. M.	55	75.6	62.6	2d	1.8	0.029	24	Slowing of heart with almost entire loss of deficit; symptomatic improvement
D. F. K.	52	69.8	67.8	1st	2.0	0.0295	16	Slowing of heart in spite of fever
A. M. M.	44	60.6	57.4	5th	1.8	0.030	20	Slowing of heart; later died of mesenteric thrombosis
G. J. F.	18	52.2	47.0	36th	1.4	0.030	28	Slowing of heart; loss of deficit; nausea
T. F. B.	55	68.2	66.2	3d	2.1	0.032	16	Slowing of heart; decreased deficit; lessened dyspnea; nausea; increased vital capacity
M. A. D.	57	55.4	46.2	3d	1.8	0.0389	24	Slowing of heart; loss of deficit; no nausea; symptomatic improvement
M.	56	58.4	57.0	4th	1.8	0.0315	24	Slowing of heart; decreased deficit; symptomatic improvement
F.	29	57.0	52.2	5th	1.5	0.029	10	Slowing of heart; diminished deficit; marked increase in vital capacity
T. F. B.†	55	70.0	65.0	3d	2.0	0.030	6	Slowing of heart; symptomatic improvement

* Calculated on basis of lowest weight.

† Second admission; effect less permanent at this time.

to 1.5 c.c. We have not made as yet definite studies with this point in mind. That more digitalis is required when given slowly was well illustrated in one patient with auricular fibrillation who had no toxic symptoms and but moderate effect on the heart rate when the calculated dose was given slowly. Some weeks later the same amount of digitalis given as a single dose produced not only a marked slowing of the heart, but in addition considerable nausea with vomiting.

Case 1 shows very well the typical response to repeated small doses in a patient with auricular fibrillation. Here may be seen the gradual slowing of the heart with reduction of the pulse deficit and gradual loss of weight. The digitalis was given over a period of six days. The calculated physiologic dose would be approximately 2.7 gm. He actually received 4.2 gm., which was followed by rather marked nausea and vomiting, indicating that the amount given was somewhat in excess of the optimum dose. The effect, as judged by the heart rate, persisted for fully twenty days after the drug was discontinued.

Case 2 shows a similar effect, though the administration was not carried to the point of vomiting. This patient, also with fibrillation of the auricles, was given was slight, within 10 per cent. in all cases but one, in which the large dose, 38.9 mg., was approximately 30 per cent. above the average.

It is of considerable interest to note that while the standardization was originally done by the frog method, the preparation was also tested on cats through the kindness of Dr. S. A. Levine, who found that the minimum lethal dose was 0.095 gm. per kilogram of cat weight. Converting the foregoing therapeutic dose, 30 mg. per kilogram of body weight of patient, to cat units per pound, the Eggleston standard, the value is 0.145 unit. Eggleston [1] found in his series an average of 0.146 cat unit per pound and recommends the standard dose of 0.15 unit, the dosage used by Robinson [2] in the series recently reported by him. The agreement is especially striking since the standardization of our preparation by the cat method was done late in the course of the observations, and the first use of the value was made in computing these end-results.

Case 3 is a good example of a single physiologic dose in auricular fibrillation. Here is seen a large pulse deficit completely and persistently eliminated in twenty-four hours. The patient came in complaining of nausea, a symptom that did not recur after the digitalis became effective. No further digitalis was required while the patient was in the hospital.

4. Pardee, H. E. B.: Notes on Digitalis Medication, J. A. M. A. 73: 1822 (Dec. 13) 1919.

Case 4 shows a similar effect, but illustrates the rapidity of action. Here an initial slowing is seen in four hours, and complete elimination of deficit in twelve hours.

While in no condition is the effect on the pulse rate so strikingly seen as in patients with auricular fibrillation when after a single physiologic dose initial slowing may be seen in from three to six hours and maximum slowing within twenty-four hours, still there is little doubt in the minds of most clinicians that much good can be expected from proper dosage in patients showing regular rhythm when their symptoms are evidence of heart failure.[5] We have had the opportunity of giving large doses of digitalis to a number of patients with regular hearts, using the same basis for calculation as in the cases mentioned above. In many the effects were quite as gratifying as in those showing auricular fibrillation. The average dose was the same.

This raises the question of evidence by which one may judge the beneficial effect of digitalis therapy. In patients with fibrillation of the auricles a marked slowing of the heart rate, especially the rate as counted by the stethoscope, and the reduction of the pulse deficit is one of the most striking phenomena in clinical medicine. When the rhythm is regular, however, marked slowing is not to be expected, and frequently the rate remains but little changed. In these patients an increase in the pulse pressure, due chiefly to a lowering of the diastolic pressure, is characteristic during the height of the digitalis effect, but is frequently temporary.

That patients may show a spontaneous diuresis on being put at rest is frequently noted. It is, therefore, occasionally difficult to be sure just what part digitalis plays in this increase in fluid elimination. Many times, however, the diuresis follows the administration of digitalis in so evident a manner that little doubt can be felt as to the stimulus given by the drug. At times a profuse diuresis may start within six hours after giving the full single dose of digitalis, as was well illustrated in Case 5. Here the digitalis was given at 10: 30 a. m. The diuresis began late in the afternoon, and continued throughout the night, so that the patient was voiding practically every half hour. With or without a diuresis the patients may show other evidence of rapid improvement, such as lessened dyspnea, improved color, ability to sleep, and generally increased comfort. The electrocardiograph will practically always show the effects of sufficient dosage of digitalis within twenty-four hours or less. The chief evidences of this are the well known increase in P-R time and changes in the form of the T waves.

There is one evidence of cardiac efficiency on which we wish to lay especial stress, and that is changes in the vital capacity of the lungs. Peabody [6] and McClure and Peabody [7] have shown that in patients with symptoms of heart failure the vital capacity may be greatly reduced; that from a mechanical standpoint, dyspnea seems to be due to the inability of the patient to take in sufficient volumes of air to meet his physiologic requirements without considerable effort. As it has been expressed, his "pulmonary reserve" is reduced. Making allowance for age, sex, height and anatomic defects, changes in the vital capacity, especially changes seen in the same individual from time to time, give perhaps the most sensitive objective measure of the circulatory condition, and especially in regard to the tendency to dyspnea. Lowering of the vital capacity has frequently been observed to precede obvious symptoms of cardiac failure. On the other hand, as the patient improves, a corresponding increase in the vital capacity may be expected. This test has proved of considerable value in judging the effects of digitalis, especially in those patients with regular rhythm when the heart rate changes are slight. Increases of as much as from 400 to 500 c.c., or from 15 to 20 per cent., have been seen in a number of instances in the first twenty-four hours after the physiologic dose, while the records during the preliminary rest period may show but little variation. Illustrations of prompt increase in the vital capacity are seen in Cases 5, 6 and 7. Conversely, it is felt that if the vital capacity is low and does not increase during treatment, the prognosis for recovery is poor. This is illustrated in Case 8, in which, in spite of a satisfactory and prompt effect on the heart rate, the vital capacity remained low and the patient was but little improved. It was necessary to transfer her to a hospital for chronic cases for continued care.

That any active digitalis will produce nausea and vomiting by its effects on the central nervous system, if pushed but slightly beyond the maximal therapeutic point, is well known. Consequently, no claim is made as to the freedom from toxicity of this preparation. When large doses of digitalis are being used, occasional symptoms of this character are to be expected; for without doubt there is some individual variation in susceptibility to digitalis. While the effects of toxic doses are distressing to the patient and to be avoided if possible, really dangerous symptoms are not seen if one knows the strength of his preparation and uses ordinary judgment.

That not all patients with heart failure will be obviously benefited by digitalis is admitted. These fall roughly into two groups: (1) those in whom the cardiac condition has progressed beyond the point at which they can be truly benefited by any therapeutic procedure, and (2) those with cardiac lesions, but in whom because of rest and other therapeutic measures all symptoms of failure have disappeared. A third group, perhaps, should be added including certain patients in whom the effectiveness of digitalis cannot be demonstrated but who respond to rest prolonged for weeks or months. It is true, however, that in patients with auricular fibrillation, digitalis is of service in maintaining a slow heart rate and thus aiding greatly in protecting the patient from a recurrence of symptoms.

Case 9 is a record of a patient with a regular heart who, as a result of rest in bed, Karrel diet, etc., had lost practically all her symptoms, one of the most conspicuous of which was a distressing cough. Her vital capacity had increased in thirteen days from 1,725 to 2,400 c.c. On her thirteenth day in the hospital she was given the calculated dose for her weight, 1.7 gm. of the extract. In this instance nausea and vomiting were produced, the nausea persisting for two days. During this period there was actually a fall in the vital capacity, which gradually returned to the previous highest point. It is of interest to note that at the height of the digitalis effect the heart rate at one time was 48 per minute, though there was no evidence of

5. Christian, H. A.: Digitalis Therapy: Satisfactory Effects in Cardiac Cases with Regular Pulse Rate, Am. J. M. Sc. 157: 593 (May) 1919.
6. Peabody, F. W.: Cardiac Dyspnea, Am. J. M. Sc. 155: 100 (Jan.) 1918.
7. McClure, C. W., and Peabody, F. W.: Relation of Vital Capacity of Lungs to Clinical Condition of Patients with Heart Disease, J. A. M. A. 69: 1954 (Dec. 8) 1917.

dissociation. No direct benefit from the digitalis could be observed.

Case 10 is a similar record of a patient with auricular fibrillation and hypertension. While entering with considerable edema and some dyspnea, these symptoms disappeared with rest and other treatment. It is to be noted that the pulse was originally slow without deficit. He had a marked diuresis beginning on the sixth day.

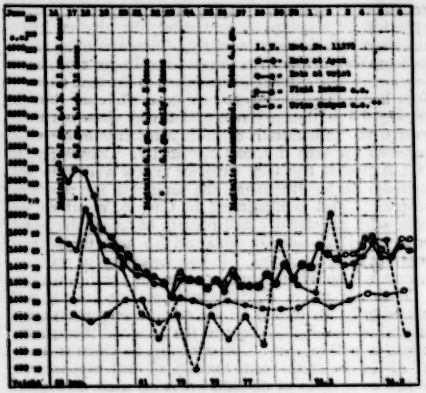

Chart 2.—Effect of digitalis in Case 2.

On the thirteenth day he was given 2 gm. of digitalis, and the calculated dose was completed on the fourteenth day, making a total of 2.4 gm. There was an initial fall in the systolic blood pressure and a more persistent lowering of the diastolic pressure. Objectively there was no marked improvement in the patient's general condition, though the vital capacity was increased by 200 c.c. during the next four days.

These cases are reported, not to detract from the value placed on digitalis as a great therapeutic agent, but to emphasize the point that it should be expected to show its usual beneficent effect only when the patient has symptoms due to heart failure in the broad meaning of the term.

In practice, in order to avoid the nausea that occasionally follows large doses of digitalis, it is well to give at the first administration—if the patient has not had digitalis within two weeks—0.4 gm. less than the calculated dose. If in twenty-four hours satisfactory results have not been obtained, the remainder can be given. Another method of value is to give at the first administration from 0.4 to 0.6 gm. less than the calculated dose, and then after twenty-four hours to give 0.2 gm. every six hours until indications for discontinuing the drug are seen. Occasionally somewhat more than the calculated amount will be necessary. Eggleston[8] has recently discussed the use of digitalis in large doses in detail.

CASE ABSTRACTS

Case 2 (Med. No. 11279, Chart 2).—A Russian Jew, aged 53, admitted, June 16, 1919, with the diagnosis of chronic myocarditis, auricular fibrillation, tabes dorsalis and syphilis, complained of shortness of breath. He spoke little English, and details of the history are incomplete. He had apparently had no previous cardiac symptoms. The present illness began five weeks before with dyspnea, and he had to stop work three weeks before coming to the hospital. Since then he had been orthopneic, and one week before admission his feet began to swell. The pupils were irregular, of unequal size, and fixed to light. The deep reflexes were all absent. The heart was markedly enlarged and absolutely irregular. There was definite but not extreme Cheyne-Stokes respiration. There was evidence of fluid at the bases of the lungs and considerable edema of the feet and legs. The liver was somewhat tender. The blood pressure was: systolic, 128; diastolic, 84. An electrocardiogram revealed auricular fibrillation and left ventricular preponderance. The Wasserrmann reaction was positive in the blood and spinal fluid, in which there was also pleocytosis of 46 cells and a positive globulin test. The weight on admission was 89 kg. The lowest weight was 74.2 kg.

On the day of admission, 0.2 gm. of the extract of digitalis was given every four hours for five doses. This was followed by 0.2 gm. three times daily for twelve doses, 0.1 gm. three times daily for three doses, and 0.1 gm. daily for five doses, making a total of 4.2 gm. in eleven days. The calculated dose on the basis of lowest weight was 2.2 gm.

The patient showed a gradual but steady improvement, with disappearance of dyspnea and loss of weight. The pulse deficit had disappeared on the fifth day.

Case 3 (Med. No. 12711, Chart 3).—An American clerk, aged 54, admitted, Jan. 13, 1920, with the diagnosis of chronic myocarditis and auricular fibrillation, had first entered the hospital in February, 1919, complaining of shortness of breath. He had had occasional attacks of rheumatism when a boy, and frequent tonsillitis. He was refused life insurance thirty years before because of a "leaky heart." A year previous to his first entrance he began to suffer from dyspnea, which increased particularly after he had influenza. He also developed edema. He had short attacks of precordial pain—not altogether typical of angina pectoris. The heart was enlarged and absolutely irregular. There was moderate edema of the extremities and Cheyne-Stokes respiration. He left the hospital feeling very well, and had been taking digitalis in small doses until one month before the second admission. He had worked in a postoffice up to this time (one month before), when he stopped work because of loss of strength and nocturnal dyspnea. He was also troubled with nausea and vomiting, which he attributed to digitalis, and he had not taken any for the preceding four weeks, though the nausea had continued.

On admission he was able to lie flat in bed, but there was definite periodicity in his breathing. The heart was enlarged

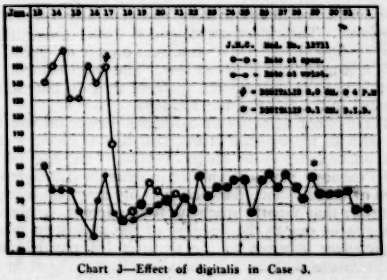

Chart 3—Effect of digitalis in Case 3.

with a loud systolic murmur heard over the precordium. The action was absolutely irregular. There was a large pulse deficit of from 50 to 60 beats per minute. An electrocardiogram revealed auricular fibrillation and some preponderance of the left ventricle. The patient's weight on admission was 73.6 kg.; lowest weight, 70.4 kg. The calculated dose on the lowest weight was 2.1 gm.

8. Eggleston, Cary: Administration of Digitalis by "Eggleston Method," J. A. M. A. 74:733 (March 13) 1920.

The patient's condition remained unchanged until the fifth day, when he was given 2 gm. of the digitalis extract at 4 p. m. An initial slowing of the heart was noted in four hours. In twelve hours the rate was 60 a minute, without deficit. Two hours later he was given some magnesium sulphate, after which he vomited. There was no other evidence of toxic effect. Improvement was continuous from this time, with no recurrence of nausea and vomiting, which was complained of on admission. He had had some nausea during the five days of rest before digitalis was given.

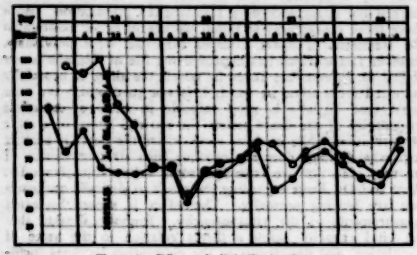

Chart 4.—Effect of digitalis in Case 4.

CASE 4 (Med. No. 12296, Chart 4).—An American "matron," aged 55, admitted, Nov. 18, 1919, with the diagnosis of chronic myocarditis, auricular fibrillation, mitral stenosis and syphilis, entered the hospital for the sixth time for cardiac symptoms. She had had rheumatic fever at 17. There were several miscarriages following the first child. The Wassermann reaction was positive. Cardiac symptoms began in 1914. The auricles had been fibrillating since 1915. She had been discharged from her fifth admission, fifteen months before. Since then she had been able to work part of the time. The present illness began six weeks before admission, with weakness and dyspnea. She had been in bed nine days with dyspnea, "fainting attacks," and edema of the legs. She appeared acutely ill with marked cyanosis, jaundice and dyspnea. The heart was enlarged, absolutely irregular, and rapid, with a deficit of about 40 beats a minute. There was a loud systolic murmur heard over the precordium, most marked at the apex. Râles were heard over the bases of both lungs. There was marked edema of the extremities. She was mentally confused. The patient's weight on admission was 75.6 kg.; lowest weight, 60 kg.

Because of the severity of her symptoms she was given 1.8 gm. of digitalis extract at 9:30 a. m. on the second day. At that time there was a pulse deficit of 35 beats a minute. Though she was reported to have vomited about half an hour after receiving the digitalis, at 8 p. m. the heart rate was 60 without deficit. The initial slowing was noted in four hours. All symptoms were improved, and she lost 6.6 kg. in weight in five days. On the eleventh day, because of increase in the heart rate and slight gain in weight, she was given 0.2 gm. of digitalis three times daily for six doses. Following this the heart rate averaged 70 a minute with very slight deficit during her stay in the hospital, and improvement was continuous.

CASE 5 (Med. No. 12093).—A Russian Jew, aged 44, admitted, Oct. 22, 1919, with the diagnosis of chronic myocarditis, hypertension and arteriosclerosis, complained of dyspnea, nocturia and insomnia. The first attack of dyspnea occurred three years before while he was walking. It was said that he had a blood pressure of 190 at that time. During the last two years he had been troubled with pain in the arms on exposure to cold. Nine months before he was told by his physician that he had kidney trouble, and rest in bed was advised. There was nocturia during this time, and for a month before admission it increased markedly. The patient was pale and adipose, with slightly cyanosed lips, enlarged heart with loud systolic murmur, a systolic blood pressure of 206, diastolic 140, evidence of edema at the bases of the lungs, and slight edema of the lower legs. The breathing was shallow and regular. The heart also showed distinct gallop rhythm, and pulsus alternans was present. The rhythm was regular. The rate was between 90 and 110. The patient's weight on admission was 81 kg.; lowest weight in hospital, 79 kg. October 23, the vital capacity was 1,950 c.c.; on the 24th, 2,200 c.c. On the 26th the blood pressure was: systolic, 188; diastolic, 130. Pulsus alternans and gallop rhythm were present. On this day the patient was given 2.5 gm. of the digitalis extract without toxic symptoms. On the 27th the vital capacity was 3,100 c.c.; blood pressure: systolic, 194; diastolic, 116. Alternation and gallop rhythm were not present. From this time on there was a steady improvement with an increase of the vital capacity to 3,600 c.c.. Blood pressure on discharge was: systolic, 176; diastolic, 106.

The patient was admitted a second time March 3, 1920 (Med. No. 13089, Chart 5). After leaving the hospital he was able to be up and about for most of the time until the second week before admission. Since then he developed cough, increasing dyspnea, marked edema and sleeplessness. During this time he remained in bed. Examination disclosed a more severe condition than on the previous admission. Pallor had increased, dyspnea was more evident, and there was excessive edema. The heart gave the same findings, except that alternation was not noted. The liver edge was palpable 10 cm. below the costal margin in the nipple line. There were few crackling râles at the bases of the lungs. Blood pressure was: systolic, 190; diastolic, 130. The weight on admission was 90 kg.; lowest in hospital, 66 kg. The vital capacity, March 4, was 2,125 c.c. March 5, the blood pressure was: systolic, 176; diastolic, 130. March 6, the vital capacity was 2,250 c.c. Two small hemorrhages were discovered in the right retina. As there was no definite improvement and the condition of the patient seemed serious, he was given 2.3 gm. of digitalis extract. March 7, the note reads: "Yesterday at 10:30 a. m. patient was given 2.3 gm. digitalis. His output chart shows that no urine was voided from 7 a. m.

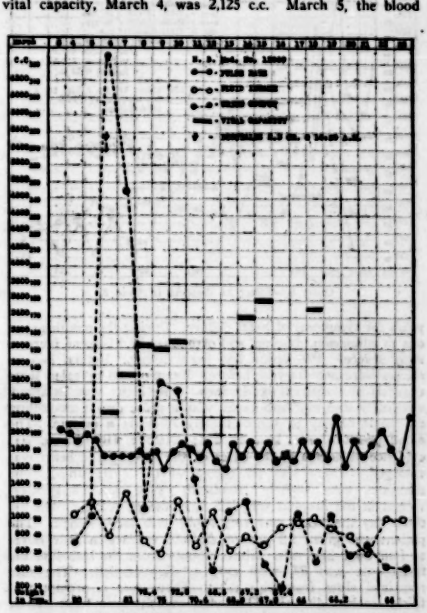

Chart 5.—Effect of digitalis in Case 5.

to 12: 55 p. m. when he put out 425 c.c. He voided 450 c.c. at 3: 30 p. m. and 500 c.c. at 6: 20 p. m. Beginning at 8 p. m. he voided practically every half hour during the night, making a total of 6,475 c.c. for the twenty-four hours. The output for the day previous had been 1,000 c.c. Vital capacity yesterday was 2,250 c.c., which was an increase of about 150 c.c. over the previous day. This morning it is 2,700 c.c., an increase of 450 c.c. There have been no evident toxic symptoms: in fact, the patient complains of being hungry. He still has moderate Cheyne-Stokes respiration. The night nurse reports that he seemed to sleep more comfortably except for the frequent voidings. On the whole, he seems definitely better than yesterday." From this point on, condition improved and the vital capacity increased to 3,500 c.c. Later, April 10, after being allowed to walk about the ward and the fluid and food intake had been increased, the vital capacity dropped to 2,800 c.c. Following this he developed symptoms of dyspnea and weakness and it was necessary to enforce continuous rest in bed, at the time of compiling this report.

Case 8 (Med. No. 11646, Chart 8).—An American housewife, aged 57, admitted, Aug. 15, 1919, with the diagnosis of chronic myocarditis, auricular fibrillation, hypertension, arteriosclerosis and chronic nephritis, complained of dyspnea. She had been in the hospital twice before during the last three

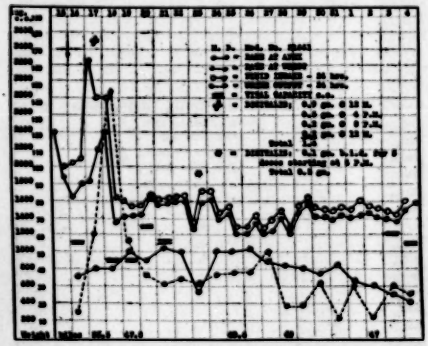

Chart 8.—Effect of digitalis in Case 8.

years for symptoms of heart failure. During the month previous to admission, dyspnea and orthopnea had become increasingly severe. The vision had been failing. Retinal hemorrhages were noted a year before. Examination revealed some cyanosis and distressing dyspnea. The heart was enlarged, absolutely irregular and rapid, with a pulse deficit amounting on the third day to approximately 70 beats a minute. The blood pressure was: systolic, 210; diastolic, 110. There was evidence of edema at the bases of the lungs. The heart was enlarged. There was no edema of the extremities. The sclerotics were slightly jaundiced. The patient's greatest weight in the hospital was 55.5 kg.; lowest, 46.2 kg. On the third day the heart was very rapid with large deficit. The patient was given 1.8 gm. of digitalis extract in four doses at four hour intervals. Sixteen hours from the last dose the heart rate was 80, with only a slight deficit. The rate remained slow from this time. There was a prompt and fairly marked diuresis. The vital capacity was 1,100 c.c. on admission, and was never greater than 1,300 c.c. during her stay of thirty-six days in the hospital. The blood pressure remained nigh. Though the patient was more comfortable after receiving digitalis and the pulse remained slow, she never showed any marked improvement. She was discharged in an ambulance to continue rest at home or in a hospital for chronic cases.

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ABSTRACT OF DISCUSSION

Dr. G. Canby Robinson, St. Louis: The recent advances in the use of digitalis may be spoken of under three heads. In the first place, we have learned to regulate the dosage of the drug more effectively. It must be used in doses sufficient to get the therapeutic, or, perhaps, the very early toxic effects. Secondly, we have learned to recognize the early toxic symptoms through the use of the electrocardiogram and the occurrence of symptoms, such as nausea. Thirdly, we have learned the importance of a standardized preparation. With these three conceptions in mind, we are in better position in the treatment of heart diseases than we were previously. Another factor which has improved the use of digitalis is our ability to differentiate cases in which the drug is especially indicated from those in which it is not so useful. We now know that digitalis is very valuable in cases of complete irregularity of the heart action, the auricles being in a state of fibrillation, while in those cases where the heart is beating regularly, digitalis does not produce such striking effects. I am very glad that we have had some information from Dr. West and Dr. Pratt regarding the effect of digitalis on hearts that are beating normally. The effect is shown by exact measurements of the vital capacity. Peabody showed that the vital capacity bears a direct relation to the state of circulation, and diminishes as the circulation becomes inefficient. That method is valuable for the study of the circulation. The aqueous extract of digitalis should be of value in that it is stable and can be standardized definitely. This paper marks a definite step forward in the use of digitalis in heart disease, where we often need the drug to act rapidly, and where we need to know accurately the strength of the drug we are administering.

Dr. C. F. Wahrer, Fort Madison, Iowa: Given a well-diagnosed case for the use of digitalis, the next most important step is to have a reliable and dependable drug to give to the patient. It would certainly be a relief to have some dependable standard. Sir James McKenzie said that he had no trouble in getting a good digitalis. So will you all if you insist on getting it and learn where to get it. As Pratt, Eggleston and others showed, there is a vast difference in the preparations on the market. We should know where to go for reliable goods and not depend on the offerings of the agents of the many pharmaceutical houses.

ETHER-OIL COLONIC ANESTHESIA*

WALTER LATHROP, M.D.
HAZLETON, PA.

Experience with the method here described is presented from the standpoint of the operating surgeon, and has been derived from 1,002 cases of various kinds, chiefly goiter, thus distributed:

Hyperthyroidism and exophthalmia	166
Cystic goiter	104
Colloid and cystic goiter	388
Parenchymatous goiter	226
Abdominal and miscellaneous	118
Total	1,002

In 1902, Cunningham, at the Boston City Hospital, devised an apparatus for introducing ether-laden air, which was used in that institution, without causing the complications of earlier methods. This ether and air, however, caused colicky pains and discomfort. The same conditions were found by Buxton, who observed, in addition, tenesmus, diarrhea and more or less collapse. Many other reports were made by various observers, but they were largely negative, until the first marked advance was made by Sutton,[1]

* Read before the Section on Surgery, General and Abdominal, at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Sutton, in Gwathmey and Baskerville: Anesthesia, New York, D. Appleton & Co., Chapter XI.

using oxygen instead of air with ether. He reported 140 cases in the Roosevelt Hospital, New York City, chiefly in the service of George E. Brewer, but the apparatus used was rather complicated, and this method was again allowed to lapse.

Hewitt [2] says, "If the risk of diarrhea, melena, and after stupor could in any way be greatly reduced, rectal etherization would be strongly indicated in certain cases." This has been accomplished by the present method of combining ether and oil.

Dr James T. Gwathmey made the first report on experimental work, before the International Medical Congress, London, in 1913. In 1915 he published a very complete paper [3] on colonic anesthesia, giving its early history, experiments of various kinds, and the different technic used by those who had tried this method of inducing anesthesia. That paper still stands as a complete record and reference, worthy of being read by all who may be interested in this subject.

In cooperation with Gwathmey, experiments were made by Dr. Charles Baskerville, professor of chemistry in the College of the City of New York, and Dr. George Barclay Wallace, professor of pharmacology, University and Bellevue Hospital Medical College, to determine the rate of evaporation of ether from oils, and tests were made with vegetable, animal and mineral oils, such as olive, cotton seed, peanut and soy bean, cod liver, lanolin and liquid petrolatum. The ether used was free from acids, aldehyds and water. The experiments were made in glass, and, while not showing the changes that would take place when the ether and oil come in contact with the walls of the colon, on account of diffusion and osmosis, yet some facts were well demonstrated.

1. While ether boils at 34.6 C., it does not escape violently from an oil-ether mixture, as from an aqueous mixture when heated higher, nearly to 37 C., or body temperature.

2. The rate of separation of ether from oil quickly acquires a definite and fairly fixed speed.[4] This rate of separation is important, as a proper content of ether may be maintained in the blood to produce a desired effect, as, for example, the surgical stage of anesthesia. Four factors, acting in harmony, help to maintain an even anesthesia:

1. The constant rate of evaporation of the ether from the oil.

2. The distention of the colon, causing less ether to be absorbed than when partially distended.

3. Cooling of the mixture and the intestine as the ether leaves the oil, which retards elimination and absorption.

4. The difference between the absorptive power of the colon and the eliminative capacity of the lungs (Gwathmey).

Within five minutes after the injection of the mixture into the rectum, it is heated to body temperature; some ether leaves the oil in the form of gas, which is absorbed by the blood in the capillaries about the colon. The ether is carried through the liver by the greater circulation to the heart, and from there it is pumped into the lungs, where some of it is excreted by the air passages, while the remainder is reabsorbed, and carried on to the brain and central nervous system. The odor of ether and paraldehyd can be detected on the breath in from three to five minutes after the administration of the preliminary dose. The accumulation of mucus or saliva, seen often in inhalation anesthesia, is absent; there appears to be no irritation of the lungs, as only the ether required for narcosis passes through the respiratory tract, and the bronchial secretions, which are increased by local irritation under inhalation methods, are absent.

The respiration is normal, as a rule, and very seldom noisy or stertorous, if the anesthetist is watching the patient. The eye reflex is usually retained, even though good muscular relaxation is present. I have noticed analgesia in a number of cases, as also have others, and have conversed with the patient at different times during the operation; this is not to be expected very often. The pulse is maintained at an even plane; if rapid, as in hyperthyroidism, it usually remains so, though we frequently get a slowing, which is no doubt psychic. In ordinary cases the pulse remains full and strong. The blood pressure varies. In cases of great nervous tension, such as exophthalmia, observation has shown that the pressure falls after the patient is asleep, and usually rises immediately on his regaining consciousness. The diastolic pressure is usually low. Pressure in ordinary cases does not vary much, though the amount of surgical interference naturally has a decided effect. This applies to hemorrhage, and undue manipulation of viscera.

The safety of this method is shown by several factors, such as the rate of evaporation of ether from oil, in accordance with well known physical laws. The ether may be separated from the oil at any time by warming; but unless deliberately raised to a high point, it passes off slowly, especially at body temperature. After administering the mixture it is impossible to withdraw oil and leave ether, or vice versa. Each molecule of one is bound to a molecule of the other, and the union is broken only by evaporation. It is impossible to have deep anesthesia at one minute, and light anesthesia at another, unless purposely accomplished by rebreathing, or made light by an air-way tube or a face free from covering.

Sutton has shown that when the colon is fully distended, less ether is absorbed. When we recall that the absorbing surface of the colon is much less than that of the lungs, we see that some distention of the colon is necessary to increase its absorbing surface, and we know that overpressure does not take place, for there is very seldom distress after anesthesia, such as diarrhea, bloody stools or tenesmus, that was usual with the Cunningham-Sutton method. Again, when the ether leaves the oil as gas, the intestine is cooled during the process. This retards elimination and absorption, thus regulating the dose. The temperature of the patient remains constant, and the cold, clammy skin so often seen under inhalation anesthesia is absent in nearly all cases. The gradual absorption of the ether by the colon no doubt acts as an element of safety. Wallace made a study for one hour, by sphygmographic tracing, of a number of animals under ether-oil anesthesia, during which the pulse and respiratory tracings never varied. This fact has been well demonstrated in many hundreds of patients surgically anesthetized by this method, in whom, without any supplementary anesthetic, the pulse, respiration,

2. Hewitt, F. W.: Anesthetics and Their Administration, New York, the Macmillan Company, 1912.
3. Gwathmey, J. T.: American Year Book of Anesthesia and Analgesia, 1915.
4. Baskerville: Am. J. Surg., January, 1916.

reflexes and blood pressure all remained constant, except, as already mentioned, in hyperthyroidism.

The value of olive oil has been shown by Graham, who proved beyond question that this oil is capable of restoring to the blood certain properties which are inhibited by the action of the ether, that is, those concerned with phagocytosis. The injection of certain amounts of the oil into the rectum is followed, after three to six hours, by a restoration of phagocytic power, although ordinary depression lasts for some time. The oil absorbs any ether vapor that may still remain in the intestine, and not only prevents protracted undesired effects, but also insures speedier restoration of the opsonic index, and satisfactory recovery.

It is interesting to note that the experiments of Dr. W. H. Park of New York showed that an ether in oil mixture killed the colon bacillus in one minute, thus giving another factor of safety in the possible prevention of infection. Our experience has shown that the postoperative effects are better than with the routine inhalation methods of ether and chloroform, though there is no doubt about the great value of nitrous oxid and oxygen anesthesia.

After ether-oil anesthesia there is less vomiting or nausea, and the patient is usually comfortable and can retain nourishment; and of greater importance is the fact that there is considerable analgesia for some time, often for two or three hours, which adds to the ease of the patient.

Anociation as practiced by Crile can be carried out easily, and no doubt is very valuable in many conditions, especially exophthalmia and hyperthyroidism. Ether-oil anesthesia is especially useful in head and neck operations, because the operator is not troubled by either cone or anesthetist. It is also useful in hernias, especially as seen in patients with asthma, and in our work among coal workers, who have the common condition known as miners' asthma. These patients sleep calmly throughout, with none of the choking and cyanosis seen under ether by inhalation. The value of local anesthesia must not be forgotten in these conditions also.

Patients with short thick necks are especially good subjects for colonic anesthesia. The most valuable of all its uses is in those conditions of high nervous tension, such as hyperthyroidism, or in cases just on the border line of toxic goiter, and also when fear is a prominent factor, as seen in nervous women, and in men as well. To be able to etherize a patient in bed, remove her to the operating room, perform the operation and return her to bed with little or no knowledge of what has been done, is surely worthy of consideration, and trial in proper cases.

TECHNIC OF ADMINISTRATION

It is most important that the use of the mixture be in the hands of one who can begin its administration and have it under his care throughout and in all cases. It should never be delegated to a different physician or nurse each time it is used. The same care should be taken as in any other type of anesthesia. Experience is the great factor, and in our earlier work we used much more anesthetic than at present. After trying out various combinations and proportions, we settled down to the routine method to be described. The patient should be under observation for twenty-four hours or more. This does not apply to exophthalmic or hyperthyroid conditions, in which preliminary observation and treatment are imperative. The evening before operation an enema of soapsuds (2 pints) is given. A second enema of 1 or 2 pints of clear, tepid water is given early the next morning. To illustrate: Supposing the operation is set for 11 a. m.; then at 9:30, 2 drams of olive oil (warm), 3 drams of paraldehyd and 4 drams of ether, are given. The patient should be kept as quiet as possible. At 9:50, ¼ grain of morphin and $\frac{1}{150}$ grain of atropin are given hypodermically. At 10:20, 3 or 4 ounces of ether and 2 ounces of olive oil (warm) are given. The oil and the ether are put in a bottle and shaken thoroughly. The patient should be on the left side with both knees flexed, the right acutely. A rectal or colon tube with a funnel should be inserted not more than 6 inches, care being taken to have the mixture in the tube and all air expelled, before inserting. The mouth and nose should be covered with several thicknesses of gauze. The injection should be given slowly, *about one ounce a minute*, the funnel being held about 3 inches above the level of the patient. The tube should be clamped and allowed to remain in the rectum so that the mixture may be withdrawn during operation if there should be any indication for doing so. If there is any excitement, 15 or 20 drops of chloroform usually quiets the patient. If the patient cannot retain the oil-ether mixture, one should not try to repeat, but abandon it. The patient should be ready for operation in from twenty to thirty minutes from the time the last injection is given. The reversed Trendelenburg position seems to aid in the maintaining of an even plane of anesthesia. The jaw should be supported so that respiration will be unobstructed.

In alcoholic subjects, $\frac{1}{100}$ grain of scopolamin (hyoscin) is added to the preliminary hypodermic injection of morphin. When the operation is completed, the bowel should be well irrigated with tepid water until it returns clear. The colon may be gently massaged from right to left to aid this. One pint of water is then put in the bowel and left, or olive oil may be given in quantity of 4 ounces, to prevent any possible irritation that may be feared, though in more than a thousand cases we have had only two instances of irritation, both being an annoying looseness, which speedily yielded to treatment.

Hyperthyroidism or exophthalmia offers a most striking condition in which the value of this method is shown. These patients, as is well known, are usually high strung, nervous and apprehensive, while the danger itself is by no means small. We have repeatedly operated, with little or no knowledge on the part of the patient; stealing the gland has indeed been easy. The procedure with these patients is as follows: Supposing operation is decided on for Saturday, then a week previous, we give each day an injection of 2 ounces of tap water, with a dram of ether in it. This, the patient is told, is for its tonic effect. The morning of operation she is given the regular dose of ether-oil and paraldehyd followed by hypodermic, and the full mixture, all given while she is in bed. She usually goes to sleep very quietly, though at times requiring a few drops of chloroform; is taken to the operation room, the gland removed, or ligation performed, and when she awakens, she is in her bed, with little knowledge of what has taken place, aside from knowing something has been done to her throat; but the fear is greatly lessened or gone.

COMMENT

Surely this is well worth trying in such conditions, and when supplemented by Crile's nerve blocking, is an ideal means to get results in a very bad class of cases.

Mr. Wade[5] of London, anesthetist to the Queen's Hospital, says: "There is no doubt that this is a very valuable method of anesthesia for many operations in plastic surgery."

Ether-oil colonic anesthesia is *contraindicated* in *conditions of rectal disease*, or when *pain is caused* by its introduction. It is not recommended for routine use, as the time required for successful administration would not permit of this method, especially when a number of operations were scheduled. For regular clinic work we depend on ether by inhalation, reserving colonic anesthesia for the class of patients already mentioned. When successfully used, it will not be given up by the surgeon who tries it. Dr. Arrowsmith of Brooklyn has shown the value of this method in bronchoscopy and in gastroscopy, in which the absence of excess mucus in the air passages is a most valuable factor, as is also the fact that there is a clear passage for the escape of ether vapor. The value is undoubted in cases in which absorption must be minimized on account of some lung, heart or kidney lesion.

Our experience with this method for children has been very small, and has not been satisfactory, owing chiefly to the lack of cooperation on the part of the child, and the expelling of the mixture.

To sum up, we would advocate ether-oil colonic anesthesia in the type of cases mentioned, and emphasize the safety, comfort, control, efficieny and simplicity of the method. Under efficiency, we can do no better than quote Gwathmey, whose conclusions are practically in accord with our own:

The method insures prevention of shock, narcosis is smooth and of uniform depth, pulse and respiration remain near normal. A complete relaxation of the muscular system is secured. The stage of excitement is eliminated. The patient inhales a warm, moist vapor, and the direct irritation of a concentrated vapor is overcome. There is no eructation of gas, before or after, in 95 per cent. of cases. Hypersecretion of mucus and saliva is absent. The patient's stomach, lungs and kidneys are spared. The absence of the ether cone in surgery of the head and neck lessens the technical difficulties of the operation by giving continuous access to the field of operation.

Postoperative nausea and gas pains are reduced to a minimum.

State Hospital.

ABSTRACT OF DISCUSSION

DR. JAMES T. GWATHMEY, New York: Certain fundamental principles should be emphasized: When physiologically understood, ether-oil colonic anesthesia is one of the easiest methods to administer, requiring only a rectal tube with funnel attached and quiet for the patient. It is one of the safest methods. The margin between full surgical anesthesia and a toxic dose is greater than with any inhalation method. It is one of the most pleasant methods for the patient, as attested by the fact that those who have tried other methods prefer the colonic. A greater relaxation of the musculature exists than is usual with any inhalation anesthetic. A smaller amount of ether per hour is required than by any other method. The estimated amount is two ounces per hour, which seldom varies. It is regulated as easily as any inhalation method, by (*a*) covering the face with a towel to deepen the anesthesia, (*b*) by placing an airway tube to lighten, or (*c*) by unclamping the rectal tube and draining the residue, and flushing thoroughly. It can be terminated at any time, as far as the anesthetic is concerned, the patient continuing to sleep from the other drugs used. While the rate of absorption is slightly different with each patient, dependent on the age, temperature and general condition, it is constant when established—an anesthesia deep at one time and light at another is physiologically impossible. The brain is more completely protected against reflex stimuli than by any method of inhalation anesthesia; and this is proved by the patient crossing his legs, changing his position, or conversing with the surgeon as in spinal analgesia. So-called analgesia with nitrous oxid-oxygen, where the patient is continually squirming and refusing to be comforted by the anesthetist, but on awakening, remembers nothing of the pain, is not analgesia but amnesia. The brain is not protected in so-called analgesia with nitrous oxid and oxygen. The complete analgesia of the colonic method is dependent on the synergistic action of all the drugs concurrently given with the ether—an extra amount of ether will not have the same effect. The quiet sleep and analgesic stage for a few hours after the anesthetic is terminated is an advantage to the patient, and should not be counted against the method.

DR. ALEXANDER PRIMROSE, Toronto: In the hospital at Sidcup, England, Major Gillies found that rectal anesthesia by ether oil was entirely satisfactory. In these cases requiring a prolonged technic for the repair of face and jaw wounds, it was important to get the anesthetist out of the way of the operator.

DR. J. SHELTON HORSLEY, Richmond, Va.: When a cautery must be used in the mouth colonic anesthesia is ideal. It would seem indicated in cases of exophthalmic goiter, but here, in my hands, the results have been unsatisfactory, probably because this disease causes some affection of the liver, as Dr. Crile has shown. If you pour all the ether through the portal circulation and concentrate it on the crippled liver there may be unfortunate results. It is like giving ether by inhalation to a patient with seriously damaged lungs.

DR. GEORGE W. CRILE, Cleveland: Do you use local anesthesia in conjunction with local analgesia?

DR. WALTER LATHROP, Hazleton, Pa.: Yes. Our best success has been with the exophthalmic type of goiter. We have had very few mortalities, not more than we would have had with any other method because we know what hyperthyroidism means. We get these patients in the best condition possible. If we are going to operate a week from today on a woman highly strung, nervous, scared to death, she is given a dram of ether and two ounces of tap water as a "tonic." This is repeated daily until the seventh day, when she is given the regular dose of paraldehyd, ether and oil followed by a hypodermic. She wakes up in bed after the operation with little knowledge of what has been done.

5. Wade: Anesthetic Supplement, Am. J. Surg., July, 1919.

Early Diagnosis of Breast Cancer.—It is wrong to teach students that axillary lymphatic enlargement is a sign of breast cancer; and it is criminal to ask men to wait for its appearance before making a diagnosis. Which of us would await the onset of gangrene before diagnosing strangulation in a hernia? Yet the enlarged lymph nodes of the cancerous breast are almost as fatal a complication in the long run as gangrene is in hernial strangulation. Bloodgood's aphorism expresses this graphically, when he tells us that a woman with a cancerous lump in her breast, but no cancerous glands in her axilla, has four chances out of a possible five of a permanent cure by operation; whereas a woman with a cancerous lump in her breast and cancerous glands in her axilla, has not one chance in five! You will see then that to wait for the appearance of an enlargement of the axillary glands to make a diagnosis of cancer of the breast is to throw away 600 per cent. of your patient's chances of an operative cure. An earlier diagnosis is our only hope of obtaining better results.—W. Doolin, *Med. Press*, April 28, 1920.

RELATION OF QUANTITATIVE METHODS TO THE ADVANCE OF MEDICAL SCIENCE*

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SAN FRANCISCO

The progress of science has been marked by the transition from purely qualitative observations to quantitative determinations. In astronomy the possibility of measurements was perceived very early and carried out with comparatively a high degree of accuracy. In physics and chemistry the phase of measurements came mainly with the modern development of precision instruments; and it has been largely through their use that these sciences have come up from the notions of alchemy and of fire and water as elements. Measurements in the biologic sciences are still more recent, but are now being pursued with increasing attention. They occupy a prominent place in a large part of recent biologic literature, and their importance has been so far emphasized as to give the name *Biometrica* to a leading research journal in this field.

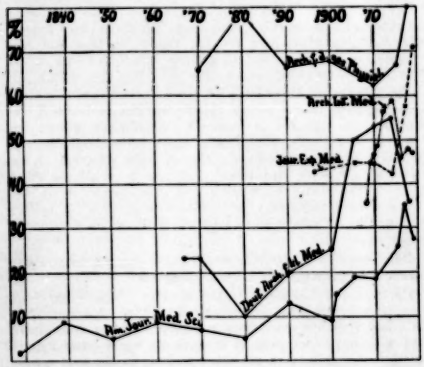

Chart 1.—Percentages of quantitative reports in various medical journals.

That the medical sciences are following the same trend has frequently been noted. I have examined the extent to which this is true by sorting, in several representative journals, the original contributions in two classes, which may be called quantitative and non-quantitative contributions. Among the former were included only reports of investigations in which the idea of quantity was a main if not the sole objective of the investigators—mere statements of such quantities as weight, temperature or blood pressure were not used to classify an article as quantitative if they were but incidental to the main purpose of the description. Statistical analyses of clinical or other material were counted as quantitative. In going over the literature from this point of view, one is struck by the comparative vastness of opportunity for important research in the domain of measurements. As the discovery of Columbus was delimited in succeeding years by thousands of surveyors, so the discoveries of Harvey, of Pasteur and of Bright have prompted myriads of researches on circulation dynamics, on virulence and immunity, and on kidney function.

The results of the survey are shown graphically in Chart 1. It will be seen that of the contributions to the *Archiv für die gesamte Physiologie* about three quarters have always been quantitative reports. In the field of more strictly medical research occupied by the *Journal of Experimental Medicine*, the quantitative reports have been about 50 per cent. of the whole number, and apparently are on the increase. The same approximately is true for the *Archives of Internal Medicine*. These represent the comparatively recent type of medical journal for original reports. The *Deutsches Archiv für klinische Medicin* and the *American Journal of the Medical Sciences* represent the older type of clinical journal; and they illustrate well the shift in emphasis toward quantitative endeavor which characterizes the more recent work. The effect of the war is not yet clear, but there is a suggestion in both these curves of an interruption in their ascent or a positive decline.

Among the quantitative reports encountered in these journals, a considerable number were so classified because they made use of statistical methods in analyzing qualitative data. In many other cases the original data consisted of measurements of one sort or another to which statistical methods were applied in assembling and making deductions. It is therefore apparent that statistical methods of research, while primarily designed for problems in economics, in recent years have found increasing application in medicine. In other biologic sciences in which they have been employed more seriously they have become recognized as particularly applicable to the study of "characters" which vary on account of a large number of causes that are difficult or impossible to separate. Medical problems are very largely of this class and, accordingly, it is no surprise to find medical literature, and especially clinical literature, abounding with statistical reports. It is a remarkable fact, however, that almost without exception, even in the hands of workers in our foremost research and teaching institutions, medical statistical studies have confined themselves to the consideration of simple averages or associations, with little or no attention to the degree of probability supporting the "conclusions" drawn—without, in fact, making any serious application of the theory of probabilities with which they are so intimately concerned. Under these circumstances, it is of course natural that statistical methods themselves should be blamed for many abuses.

It being possible in this paper to call attention to only a few of these methods, I shall do so by illustrations, and without presenting mathematical proofs.[1]

1. *Inconsistency of Statistical Data.*—If it were reported that among 100 cases of hypertension there were: (A) fifty-two over 50 years of age, (B) thirty-one with albuminuria, and (C) forty-seven with decreased phenolsulphonephthalein elimination; and that of those over 50, fourteen had albuminuria (A B), and four decreased phenolsulphonephthalein excretion (A C), that albuminuria and decreased phenolsul-

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* Read before the Section on Practice of Medicine at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. For an elementary exposition of the theory of probabilities, the reader is referred to Yule, G. U.: An Introduction to the Theory of Statistics. Griffin & Co., 1912; for a guide to the use of formulas, Davenport, C. B.: Statistical Methods, New York, John Wiley & Sons, 1914.

phonephthalein (B C) were associated nine times, and in the group over 50 years (A B C) twice, there would be nothing obviously wrong with the figures. And yet, by simple arithmetic,[2] it can be shown that they are impossible.

2. *Association of Attributes.* — Attributes may be associated positively (e. g., cases with positive Wassermann reactions and aneurysm), negatively (e. g., presence of adenoids and excellence of intelligence of schoolchildren), or they may be independent (e. g., blue eyes and gastric ulcer).

The Criterion of Independence: If two attributes, such as astigmatism (attribute A) and adenoids (attribute B) are independent, then the proportion of A's multiplied by the proportion of B's will tend to equal the proportion of A B's (individuals having both conditions). Thus, if among 1,024 schoolchildren, 384 had astigmatism and 144 adenoids, we should expect, if these are independent, that about $\frac{384 \times 144}{1,024} = 54$ would show both abnormalities.

A "coefficient of association" may readily be calculated to express numerically the degree of positivity or negativity in an association, from +1 (complete positive association) to 0 (independence) or −1 (complete negative association). But the value of deductions as to associations of attributes expressed by such a coefficient or otherwise will naturally depend on the numbers of observations made, and accordingly the amount of variation to be expected from chance alone. This expectancy may also be shown quantitatively, as will be shown in the discussion of variables.

3. *Manifold Classification.*—This may be illustrated by the accompanying table showing the number of times certain gastric acidity findings are supposed to have occurred in association with the diagnosis given.

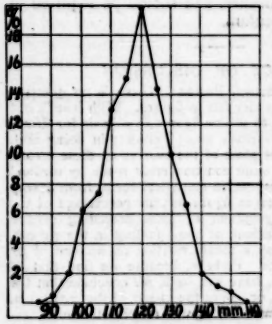

Chart 2.—Example of a frequency polygon, showing the distribution of systolic blood pressure measurements in a group of 314 young men.

Not only may the relative frequencies of diagnoses in relation to acidity findings and vice versa be seen from such a table, but, by calculating a contingency coefficient, it may be shown whether or not on the whole these conditions are related to the acidity findings, and if so whether the relation is very close or the reverse; that is, the general value of acid measurements could be stated mathematically and this might be compared with the general value of other diagnostic procedures.

4. *Frequency Distribution.*—As distinguished from the simple attributes of the foregoing examples, the following case of a frequency distribution illustrates some of the special methods applicable to variables: If the blood pressure of a group of young men is measured, the results may be expressed in a table showing the number of measurements in the "class intervals" 100 to 104 mm. of mercury, 105 to 109, etc.; and the same may be shown graphically in a "frequency polygon" such as Chart 2. If the observations are numerous enough and the class intervals small enough, such a polygon may closely approximate the ideal "frequency curve" for the series. In medical literature there usually accompanies such studies a statement of the arithmetical mean or common average, and often of the "range" or the highest and lowest in the series; but very rarely indeed is serious attention paid to other characteristics of the frequency distribution, such as the "median" (or mid-value), the "mode" (or most frequent value, i. e., the "peak" of the curve), the question of "complexity" of the curve, or the amount of "dispersion" present. The last item is particularly important and is not covered adequately by a statement of the range, which depends on the chance variation of extreme values of the variable. A good measure of dispersion must take into account the scattering of values among all the members of the series. Of several that do this, the "standard deviation" is most commonly used by statisticians.[3]

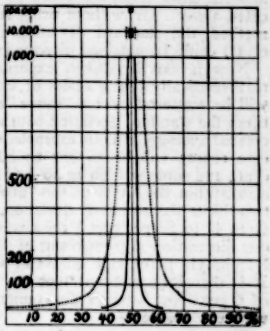

Chart 3.—Precision of percentage lymphocyte count.

5. *Simple Sampling of Attributes.*—This finds an example in the ordinary differential count of leukocytes. Our interest here, from the statistical point of view, is in the "precision" or accuracy of the observed proportions of the different types of cells. It can be shown that this varies as the square root of the number of observations on which the proportion is based; that is, the percentages based on a count of 400 cells are not four times but only twice as dependable as those obtained by counting 100 cells.

GASTRIC ACIDITY AND DIAGNOSES

	Hyperacidity	Acid Normal	Hypo-Acidity	Totals
Gastric cancer	20	56	200	276
Peptic ulcer	310	90	4	404
Gallbladder disease, etc. ..	200	165	65	430
Totals	530	311	269	1,110

Again, if in a given case the percentage of lymphocytes in one count of 100 cells was found to be 47 per cent. and later in a similar count 53 per cent., it may be important to inquire whether or not the difference of 6 per cent. is due to an actual change in the composition of the patient's blood—in other words, whether or not the difference is readily chargeable to "fluctuation of simple sampling" or whether it is probably "significant." Most clinicians would regard the difference as probably indicating a change in the blood.

2. Thus: 100 — 52 — 31 — 47 + 14 + 4 + 9 — 2 = — 5 (Yule).

3. The standard deviation is obtained by subtracting each member of the series from the mean, squaring these differences, finding the average of these squares, and extracting the square root.

To examine this point, let us suppose that in this case the actual percentage of lymphocytes as determined by a count of millions of cells examined on the same day was 50 per cent. It is evident that if this large number were counted by groups of 100 cells each, the percentages obtained from these separate groups would for the most part differ more or less from the general average of 50 per cent. They could then be treated as a series of variables and their range and standard deviations could be determined as indicated above. Or, without using such an experimental method, the standard deviation (in this case 5 per cent.) could be obtained directly from a formula.[4]

Now it can be shown experimentally as well as mathematically that a series of variables such as this will be scattered over a "range" approximately three times the standard deviation both above and below the general average. In our example, some of the lymphocyte counts will be as low as $50-(3\times5)=35$ per cent., and some as high as $50+(3\times5)=65$ per cent.; also, within the limits of the "probable error" (about two-thirds the standard deviation, hence in this case from 47 to 53 per cent.) the chances are even that in our illustration a given count of 100 cells will yield a lymphocyte percentage within or without these limits. It is therefore apparent that the observed difference of 6 per cent. between the counts mentioned is quite without significance.

Chart 3 shows, in relation to the number of cells counted, the precision of the percentage lymphocyte count in the case we have considered. The solid line shows the "probable error," i. e., the limits within which there is an even chance for an individual count to fall. The dotted line shows the range, i. e., the limit which will include about 99 per cent. of the observations. Occasionally results will even fall outside these limits through the operation of chance alone.

The lesson of these examples of the blood pressure study and the lymphocyte count, it will be seen, have a general application to studies involving averages, percentages and other variables. The average metabolic rate, or weight, agglutination titer, or blood nitrogen in one group of individuals as contrasted with another; the mortality, or the percentage of cures following different methods of treatment may and frequently do present differences which writers refer to as "very striking" or "highly suggestive," and which simple calculations show to mean nothing whatsoever. The illustration we have used has been dwelt on because it brings out the one pitfall of statistics commonly overlooked by medical workers—that associated with failure to make sufficient allowance for the operation of chance in sampling. In forming inferences from averages, great care is needed to exclude other causes of differences than the one to be investigated; but this necessity is more obvious than the necessity of considering in connection with each average its probable error or other measure of precision.

Although the mathematical training necessary to use such simple aids and safeguards in statistical work is comparatively little, it is too much to expect any sweeping change in the practices of the present generation of writers. But for the future the defect can be remedied by readjustment of the premedical curriculum. The change would not require more time in the premedical course, and would not necessarily curtail the usual instruction in physics, chemistry, biology and language, although it would undoubtedly be justified at this price. Two or three hours a week for one semester would provide a good elementary knowledge of the theory of probabilities, and most medical students have spent enough time in mathematics to have included in it this subject without detriment to their general mathematical training. For the purposes of general culture and mental discipline it would equal higher algebra, conic sections or trigonometry, which many of them study, and for their practical purposes it would far surpass these subjects. Although calculus is useful, the elementary course in theory of probabilities would not necessarily require as prerequisite anything more than high school algebra. In most universities the cooperation of the mathematics department would be necessary to rearrange the courses open to medical students; in fact, in many departments of mathematics it would be necessary to organize the course in theory of probabilities, as this subject at present is commonly left to the department of economics.

4. $\sigma=\sqrt{npq}$, where n = the number of cells counted in each "sample," p, the chances for an individual cell encountered to be a lymphocyte, and q the chances for it to be other than a lymphocyte.

SUMMARY

A survey of medical literature shows that medicine, following the trend of other sciences, is seeking its advance increasingly through the use of quantitative methods of research. The multiplicity of variables inherent in the laboratory, as well as the purely clinical material, requires the constant use of statistical methods of analysis and interpretation. Medical writers generally have relied purely on intuition in these interpretations—a practice that leads very frequently to gross misstatements of results, and which has thereby brought unmerited discredit to the use of statistical methods in medicine. The elementary theory of probabilities which deals scientifically with these methods is comparatively a simple branch of mathematics, is of great practical significance, and should be required in the premedical curriculum.

ABSTRACT OF DISCUSSION

DR. HENRY A. CHRISTIAN, Boston: There is no question that there is a false security felt in figures. With insufficient knowledge, we attempt to utilize figures as a basis for drawing conclusions, and we make many mistakes in doing that. Dr. Kilgore pointed out some of the sources of these errors. Among others are the quite common error made by medical men in drawing conclusions, in statistical form, from a very small group of cases, or to figure out the percentage of the occurrence of some symptoms, or some preceding disease in the history of the patient, or some finding in the patient, and conclude that it has a causal relation on account of its frequency of occurrence. Perhaps, because we find that 30 per cent of our patients have bad teeth, we conclude that the bad teeth are the cause, or one of the causes of that condition. We do not stop to secure the figures relative to the occurrence of just those same things in persons who are otherwise well, or who have entirely different diseases. If we are going to play with figures, we should know the rules and laws of the statistician. On the other hand, it is well to remember that the statisticians, knowing the laws of the game as far as statistics are concerned, fall into error, because often they draw their conclusions in a very accurate way from the statistics, but the data from which they make the statistics contain many inaccuracies. For example, you will find statistical literature showing the relative frequency of death with pneumonia, and death without pneumonia, in cases of influenza. That is not of very much use, because in most of the cases, the death report is made by a man who did not know whether the patient died with or without pneumonia. He was too busy examining the

lungs, or he did not realize how few signs many patients with influenza had, when the necropsy showed a very extensive pneumonia.

DR. E. S. KILGORE, San Francisco: Dr. Christian's point against the professional statisticians who attack medical problems is well taken. Medical problems obviously require medical training for their intelligent study. But it is also true that statistical problems require a knowledge of statistical methods for their intelligent handling. In some cases both requirements have been met by the collaboration of the medical man with the statistician. But the point I wish to emphasize is that the applications of the theory of probabilities in medicine are very numerous, so numerous that, at least, a rudimentary knowledge of the subject is essential for medical investigators, and even for those who would read intelligently and critically the medical literature.

MISLEADING SYMPTOMS AND ROENTGEN-RAY FINDINGS IN SUSPECTED MASTOID ABSCESS*

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There is no especial literature pertaining to the subject that I am to present, for it is purely a clinical one, and such deductions as may be reached are wholly derived from clinical experience.

When to operate in suspected mastoid abscess is largely an individual question, to be determined by the symptoms shown in each case; but we have all learned that there are certain cardinal principles which govern us in our consideration of the indications in the individual case. However, experience teaches us that these cardinal principles must be duly and carefully weighed in each instance, for in many cases the exception proves the rule in suspected mastoid abscess, and our operative findings not infrequently are in dissonance with the subjective and objective symptoms.

A septic temperature course, painful mastoid to pressure, a leukocytosis and a history of purulent middle-ear discharge of a week or ten days' duration would be regarded as a syndrome clearly indicating a suppurative mastoiditis, demanding operation. Bearing on this are the history and operative findings in Case 1.

CASE 1.—Sylvia B., colored, aged 37, ten days before coming to the hospital developed sore throat, with chilly sensations, and shortly afterward her nose began bleeding and both ears pained a great deal, followed by a serosanguinolent discharge from her ears. A swelling, painful on pressure, developed back of each ear.

Examination of the ears made at the hospital revealed both canals full of pus. There was marked swelling and tenderness over both antrums and mastoid tips. The temperature was 104.4 in the afternoon. The blood count was: 11,200 leukocytes and 78 per cent. polymorphonuclears.

The history and symptoms pointed conclusively to double mastoid abscess, so the following morning, the temperature at the time being 102, the right mastoid was first explored, not a drop of pus or even a soft cell being found, clear to the antrum, which also was free of pus. The left mastoid was then opened, with the same result as the right. The temperature went to 104 in the afternoon of that day, and then progressively declined, the patient being discharged in normal condition nine days after the operation.

What prettier picture of mastoid abscess could be asked? It was so positive clinically that we did not even wait for roentgen-ray pictures of the mastoids, and with these symptoms, negative roentgen-ray findings would not altogether have convinced us that there was not pus in the mastoid cells. Both mastoids were congested, and perhaps would have broken down in a short while, so the operation may have been conservative in this sense. But the fact remains that with freely draining middle-ears, this case was running a high, septic temperature course, and presented what usually are regarded as positive mastoid symptoms.

The question that would here arise is, Would I have been justified, in the presence of these typical symptoms, in delaying operative interference? There can be no fixed rule as to when to operate in such cases, for we all know from actual experience how rapidly some develop, and how quickly a meningitis or sinusitis can set up when the pus absorption is so great. In the case just related, both subjective and objective symptoms not only justified, but to me, demanded operation.

We are all familiar with the type of abscess found in young children, when pus has broken through the antral wall externally producing a fluctuating mass back of the ear. So Case 2 may have been regarded, if we had not carried our operative investigation deeper than customary:

CASE 2.—Sterling M., white, aged 12, was brought to the hospital with a history of earache in the right ear, beginning three weeks before. Something like a "boil," according to the father, developed behind the right ear, with a great deal of pain and increasing swelling. The child's father stated that the boy had experienced similar attacks previously, and some time before the same ear had swelled and burst externally, back of the ear.

Examination revealed a fluctuating mass, about the size of a small hen's egg, over the right mastoid process. The membrana tympani was congested, but there was no pus in the canal. The temperature was 100, in the afternoon; the blood count: leukocytes, 11,200; polymorphonuclears, 80 per cent. Roentgenoscopy revealed the mastoid normal.

Under ether the mass was opened with the usual mastoid incision. After removal of a large quantity of pus, the entire mastoid process was bared of periosteum, and carefully investigated for a sinus. None being found, the antrum was uncovered, but no pus encountered. The boy left the hospital in a few days, entirely recovered.

There was in this case evidently a burrowing of pus from the middle ear beneath the periosteum of the external auditory canal, without involvement of the bone; but it is remarkable that the corresponding membrana tympani was not ruptured. Perhaps this was one of the type of cases that we sometimes see reported as "mastoiditis without middle-ear inflammation."

Along somewhat similar lines is Case 3:

CASE 3.—Charlie J., white, aged 34, came to the hospital with a history of pain beginning in the right ear five weeks previously. There had been a slight discharge from the ear, but none recently. Four weeks before he began having pain back of this ear, with swelling, and for this reason, the pain continuing, he came to the hospital.

Considerable swelling was found over the right mastoid, and it was intensely painful on pressure. There was no discharge from this ear. The temperature was not running high, but would make quick drops to below normal. The blood showed 11,200 leukocytes, and 84 per cent. polymorphonuclears. Roentgen-ray examination revealed a normal mastoid.

The usual mastoid incision was made, and a large amount of thick pus removed. The bone apparently was healthy, but

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the antrum was entered, without pus being found. Convalescence was uninterrupted, with the exception of several marked exacerbations of temperature, with sudden drops to subnormal, coming on the third, sixth, seventh and eighth days after operation, due probably to some retention, as there were no symptoms of intracranial complication, and from the tenth day following operation there was no further fever.

Here was another case of middle-ear abscess which had burrowed beneath the periosteum, without bone involvement, and could, to the operator's exaltation, be called a "blind" mastoid abscess; but the surgeon would have to be indeed "blind," in more respects than one, so to denominate this condition.

In this connection I should like to say that I am very skeptical of numerous reported cases of mastoiditis without previous middle-ear suppuration. I doubt whether this ever occurs, though in this conclusion I may be quite wrong. Still, it is somewhat difficult to conceive of a suppuration in the mastoid cells without a previously existing suppurative condition at the gateway to these cells—the middle ear.

In reviewing my entire experience in mastoid surgery, I cannot recall an instance of suppurative mastoiditis in which either from the history or clinical evidence, a previously existing middle-ear inflammation was not traceable. To me it is a good deal like reported cases of primary laryngeal tuberculosis—I have heard of such cases, but have never seen one, this condition in my experience always being secondary.

A case of more than ordinary interest is this:

Case 4.—C. S. O., man, white, aged 22, consulted me, July 28, last year, with this history: He had been subject to "risings" in the left ear all his life. He had four attacks of this kind while in the army in France. Six days before an intensely painful abscess developed in this ear. Since then the ear had been discharging thick, yellowish pus. He had been having high fever, and the entire left side of his head had been quite painful. In fact, his suffering was so intense that he was being kept constantly under the influence of morphin. He had lost 16 pounds since the beginning of this attack.

On examination, the external auditory canal was found full of thick, yellowish pus, with drooping of the posterosuperior canal lining. There was intense pain on pressure over the mastoid antrum and tip. The patient's temperature was 100.4 at 3 p. m. A roentgenogram revealed a cloudy mastoid, apparently beginning to break down. Operation was refused, but the symptoms continuing on the afternoon of the 31st, mastoidectomy was performed. Much to our surprise, while the mastoid was hemorrhagic, not a drop of pus was encountered, none being found even in the antrum. However, recovery was prompt following the operation.

Here everything was positive, including the roentgen-ray findings, yet operation showed how erroneous was this all. But doubtless this was another borderline case, and would have gone to suppuration later. The operation was conservative, in that it brought relief.

There is no question in my mind of the value of roentgenograms in suspected mastoid abscess. In most instances, well-taken roentgenograms give positive evidence that is invaluable in aiding the surgeon in determining whether or not operation is necessary, although these pictures sometimes may prove misleading, as in the case just cited. But no otologist should neglect to have such pictures made whenever possible, not only for their diagnostic worth, but also as operative guides. However, the absence of positive roentgen-ray findings should not lull us into a sense of security which may be false, and cause us to fail to give the patient the benefit of opportune surgery. Clinical symptoms must in the final analysis be our most dependable guide, even though at times we err to the extent of performing what may appear to have been an unnecessary operation.

Here let me briefly relate the details of a case which is almost amusing from a diagnostic standpoint, but had its very serious aspect to the patient:

Case 5.—Mrs. B., aged 30, consulted me, Oct. 10, 1919, with reference to the condition of one of her ears, which six days before developed an abscess, which burst and discharged for three days. She had been suffering a great deal with this ear, even after it began discharging. She was much alarmed, because some six weeks before, having then an abscess in each ear, she had consulted a specialist in a nearby town, and after making roentgenograms of both mastoids, he told her that she had an abscess in each mastoid, was in imminent danger of her life, and must urgently have both mastoids opened and drained.

There was no pus in either ear when I saw this patient, and no mastoid symptoms. I had pictures made of the mastoids, and they showed absolutely normal mastoids.

To return to the symptomatology, the first of these cases which I have outlined presented a typical and classical syndrome of suppurative mastoiditis. It is true that in this case the roentgen-ray findings were negative as to mastoid abscess; but in the presence of such positive clinical symptoms, it would be an extremely conservative attitude that would consent to refraining from operation.

In the next two cases, while there did not exist at the time seen an aural discharge, both gave positive evidence of mastoid suppuration, with probable necrosis through the outer table, and the operative revelation of entire absence of mastoid involvement was most astonishing.

The fourth case lacked nothing by way of positive evidence, but utterly failed on operation to bear out these findings, or to account for the exaggerated symptoms of an acute suppurative mastoiditis.

While none of these cases proved to be what was operated for, that is, a suppurative mastoiditis, still, recovery apparently was hastened by operation; and even with this experience before me, I expect in future to have similar cases which will be handled in the same manner, owing to the fact that even a careful study of such cases, before advising operation, is not always going to eliminate for me the possibility of just such operative findings as I have outlined in the cases described.

When we consider the classic textbook indications for operation in mastoid abscess, we can find enough of these in any of the cases reported by me to justify operation; and yet in the light of the experience of any of us, I doubt whether there are not instances in which the classic indications are not borne out by operative findings. I am aware of the fact that some claim that, in conjunction with other symptoms, the drooping of the posterosuperior lining of the external auditory canal is always an indication for opening the mastoid, but I am not inclined to stress this symptom too much. Case 4 presented this markedly, and I have failed to find this drooping in some cases in which there was extensive suppuration in the mastoid cells, as was operatively demonstrated. So it is with other symptoms which are regarded as very positive indications, and which may prove just as misleading. These, however, are the exceptions to the rule; and in the final analysis, I think that, after duly weighing all considerations in a given case, it is far safer and better for the patient that the surgeon should abide by the

cardinal principles laid down as indications for operation in these cases, and that it is far better occasionally to open an innocent mastoid than to delay in the presence of the danger, always present, of intracranial complications, which so rapidly may supervene, and result in a fatality that could have been avoided by a mastoid exenteration.

Bank of Commerce Building.

ABSTRACT OF DISCUSSION

DR. FRANCIS P. EMERSON, Boston: The roentgen ray is as an adjunct in diagnosis, confirmatory of the clinical picture. We have often checked up our operative findings with the roentgen-ray diagnosis of what was present in the mastoid, and our experience has been that if you rely on the roentgen-ray findings alone you will open a great many mastoids unnecessarily. Another point to be emphasized in connection with mastoiditis is that in probably every acute middle ear inflammation congestion of the mastoid is present. There are very few acute mastoids that should be opened before the lapse of a week or ten days from the onset of the middle ear disease. In few acute mastoid cases will you lose the patient from not operating soon enough. On the other hand, in many cases, especially of the pneumatic type, in which cells extend up over the zygoma and far back over the sinus, if you open the mastoid too early, a long and tedious convalescence follows. In the presence of infected bone, if you open the mastoid before there is a leukocytic walling off, you are never certain of being outside of the infected area. That happens in many cases of mastoiditis where, in our anxiety, we open the mastoid too early. If we wait until the process has limited itself, the patient will have a very quick convalescence. In a fulminating case, in which the inflammation jumps from one area to another, with no tendency to limit itself, an operation will seldom save the patient. Time and again, I have seen a mastoid opened on the basis of the roentgen-ray findings, opened in the congestive stage, with the result that a second operation had to be performed by some one else.

DR. CULLEN F. WELTY, San Francisco: An antrum of Highmore that was once infected will throw a shadow that cannot be differentiated from an active infection. Doubtless, this is also true of the mastoid if it has been infected. I agree with Dr. McKinney as to the indications for operative intervention because by waiting the patient may die. I believe in early operation. Take away all the cells and there is no reaction; the temperature drops to normal and remains normal. If temperature or pain persist, you have not taken away all of the cells. Always bear in mind the cerebral complications that have existed with the other symptoms prior to operation. Cerebral manifestations do not come on so quickly.

DR. G. H. MUNDT, Chicago: The average acute mastoid case is safe until there is a breakdown of the intracellular septums. It is not a matter of having a mastoid full of pus. We should have two roentgenograms for comparison. The roentgenogram is the most valuable single aid in determining whether or not to open the mastoid.

DR. WILLIAM B. CHAMBERLIN, Cleveland: The differential diagnosis between acute mastoiditis and external otitis is not easy. I have seen patients in the Politzer Clinic waiting for five days for a differential diagnosis to be made. Dr. McKinney did not, in several of these cases, speak of the appearance of the tympanic membrane. It is not always easy in external otitis to obtain a sufficient view of the tympanic membrane, and I wonder if some of these cases might not have been an extension from an external otitis rather than an extension along the external canal wall. The roentgenogram may be exceedingly misleading anatomically. Safety lies in not gaging operative intervention by the roentgen ray, but in operating in every mastoid case as if the lateral sinus was as close to the exterior as possible.

DR. E. LEE MYERS, St. Louis: I agree with Dr. McKinney. It has been my experience since the first epidemic of influenza that too much attention cannot be paid to symptoms. In children there may not be any redness of the drum membrane, and yet at operation all the cells are found necrotic. I have had two cases of wryneck, one in a child 6 years of age, in which the wryneck was the only symptom. There was no redness of the drum membrane; no running ear. It proved to be a case of cerebellar extradural abscess. Another patient had a perfectly normal ear, as far as acuteness is concerned. The roentgen ray showed nothing in the mastoid or antrum. It proved to be a fistula of the mastoid squama an inch and a half away from the antrum. The fistula was as large as the end of my thumb. The dura was protruding.

DR. RICHMOND MCKINNEY, Memphis, Tenn.: I realize that there is a possibility of mistaking a large boil for a mastoid abscess, but that was very carefully borne in mind. All my patients gave a history of previous middle ear trouble. In none of the cases reported was there occlusion of the external auditory canal, and the congested membrana tympani could clearly be seen.

THE TREATMENT OF CHRONIC INDIGESTION IN CHILDHOOD*

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Normally the digestive powers are equal to the work demanded of them, that is, the digestion of the food. The equilibrium of the digestion may be disturbed either by a decrease in the powers of digestion or by an increase in the work to be done in digestion. The decrease in the powers of digestion may be due to the action of diseases other than those of the digestive tract, to overfatigue, either physical or mental, or to diseases of the digestive tract. The increase in the work to be done in digestion may be due either to too much digestible food or to indigestible food.

The treatment in the first place evidently consists, therefore, in the exclusion or treatment of diseases other than those of the digestive tract and the removal or remedying of all causes of overfatigue, whether it be physical or mental. It is surprising how often the source of a chronic disturbance of digestion will be found outside the digestive tract. Chronic disease of the tonsils or the accessory sinuses is a very frequent cause of indigestion. An unsuspected pyelitis is also not an infrequent cause. Success in the treatment of chronic disturbances of digestion due to other diseases evidently cannot be hoped for, no matter how careful the regulation of the diet, until these diseases have been remedied. Overfatigue is an even more common cause of chronic disturbances of digestion in childhood than are diseases outside the digestive tract. The whole difficulty in many instances is due to overplay, overstudy, overexcitement or too late hours. The removal of these causes will almost at once result in the disappearance of the indigestion. Until these causes are removed, however, no improvement, or very little, can be expected, even with the most rigid attention to the details of feeding.

Incidentally, it is important in all disturbances of digestion, no matter what the cause, to regulate exactly the intervals between feedings, to enforce regularity in feeding, and to forbid the taking of any food between meals. It is extremely important to make sure that the child chews its food properly and never washes it down

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with liquid before it is properly masticated. Regulation of these simple matters is, of itself, often enough to cure the milder disturbances of digestion in childhood.

Primary disease of the digestive tract is very uncommon in childhood. If there is disease of the digestive tract, it is almost invariably secondary to disturbances originating in the contents of the tract as the result of the ingestion of improper food or as the result of bacterial fermentation. Treatment in the next place consists, therefore, in regulation of the diet by regulation of the amount of food and by the elimination of indigestible food. The application of these general rules as to the regulation of the diet is all that is necessary in many instances, and certainly in the majority of the milder cases of chronic indigestion in childhood.

In other cases, however, and certainly in most of the more serious disturbances of digestion, the conditions are more complicated. There is an intolerance, more or less marked, for one or perhaps two of the individual food elements. This intolerance is usually the result of overfeeding with this element in the past. In the severer cases, intolerance for one or more of the food elements is almost always associated with fermentation in the intestinal contents as the result of abnormal bacterial activity. This fermentation may take place in any of the food elements, fat, carbohydrates or protein. Chronic indigestion in childhood may, therefore, be divided into indigestion with intolerance for fat, indigestion with intolerance for sugar, indigestion with intolerance for starch, indigestion with intolerance for protein, and indigestion with fermentation. The borderline between simple indigestion with intolerance for one or more of the individual food elements and indigestion with fermentation is necessarily somewhat indistinct, because there is always fermentation going on normally in the intestinal contents. The line between normal fermentation, fermentation with simple indigestion, and indigestion with excessive fermentation must evidently be very indefinite.

SYMPTOMS

All types of chronic indigestion in childhood have certain general symptoms in common, such as loss of weight and other manifestations of disturbed nutrition. Among these are dryness of the skin and hair, cold extremities, pallor, irritability, peevishness and disturbed sleep. Other symptoms, which vary according to the type of indigestion, are diarrhea, constipation and the alternation of diarrhea and constipation. The abdomen may be distended, normal in size or sunken; there may or may not be vomiting; fever of varying degrees may or may not be present. None of these symptoms, are however, definite enough of themselves to justify a positive diagnosis as to the type of indigestion.

DIAGNOSIS

While something may be told from the condition of the bowels, the odor of the breath, the condition of the tongue, the presence or absence of gas, nausea and vomiting, and the history in general, the diagnosis must be made mainly, however, on the results of the examination of the stools, as the different types of indigestion have characteristic stools. The macroscopic examination of the stools is often sufficient to justify a positive diagnosis as to the type of indigestion present. It should never be depended on alone, however, but should be verified by a microscopic examination, because the microscopic examination will sometimes show that the conclusions drawn from the macroscopic examination were not justified. The microscopic examination of the stools should, therefore, always be made. This is not a difficult matter and requires but a few minutes.

A small portion of the stool is spread on a slide and stained with either Lugol's or Gram's solution. Starch granules stain blue or violet. Another portion is spread on a slide and stained with a saturated alcoholic solution of sudan III. The neutral fat drops and fatty acid crystals stain red. Soap crystals do not stain with sudan III. A drop of glacial acetic acid is then allowed to run under the cover glass. The specimen is then heated until it simmers. This changes the soap into fatty acids, which then stain. If it is desired to determine whether the fat is in the form of neutral fat or fatty acids, another specimen is stained with carbolfuchsin. This does not stain neutral fat, but stains fatty acids a brilliant red and soaps a dull red.[1]

The bacteriologic examination of the stools is not usually necessary, but in certain cases is absolutely essential, as a positive diagnosis is impossible without it.

THE STOOLS IN INDIGESTION

The stools vary decidedly in the different types of indigestion.

Fat Indigestion.—The stools are usually large, semisolid, gray, acid in reaction, and often contain a considerable amount of mucus. They are sometimes dry, hard and gray or white. More often they are loose, frothy, gray and extremely acid. The odor is that of butyric acid, and they contain considerable amounts of mucus. Sometimes the fat is in the form of small, soft curds, or the stools appear oily, as in babies. Microscopically, the fat is present in various forms, rarely as neutral fat, more often as fatty acids or soap.

Sugar Indigestion.—The stools are loose, yellow, sometimes green, frothy and acid in reaction. The odor is that of acetic or lactic acid. The stools are very irritating to the skin, and often contain mucus. Microscopically, little abnormal is seen, except that sometimes, as the result of the diarrhea, they show unabsorbed fat and undigested particles of food which have been hurried through the intestine.

Starch Indigestion.—The stools are loose, yellow-brown, sometimes green, often frothy, and acid in reaction. The odor is acid, usually being that of acetic or lactic acid, but sometimes, if there has been a change in the starch to fat, that of butyric acid. If very acid, the stools are irritating to the buttocks, but usually are not. They occasionally contain mucus and almost invariably considerable amounts of starch, either unchanged or partially converted into dextrin.

Protein Indigestion.—The stools are loose, brownish, and alkaline in reaction. The odor is foul or musty. They usually do not contain mucus.

Indigestion with Fermentation.—The characteristics of the stools are the same as in the other types of indigestion, with the addition of those due to the fermentation. They are likely to be frothy and to contain more mucus. The acidity or alkalinity of the reaction is increased, according to the type of fermentation present, and the odor is more acid or putrefactive.

BACTERIOLOGY

In general, the bacteriologic examination of the stools is not of great importance in diagnosis.

1. Further details are given by Morse, J. L., and Talbot, F. B.: Diseases of Nutrition and Infant Feeding, New York, the Macmillan Company, 1920, p. 94.

Usually, no additional information is obtained from it. The intestinal flora is, of course, either fermentative or putrefactive, that is, one which forms acids or alkalis from the intestinal contents. The type of the intestinal flora can always be determined from the reaction of the stool. In the acid stool of carbohydrate indigestion, however, the presence or absence of organisms of the gas bacillus group is of considerable importance in indicating the form of treatment. The determination of the presence or absence of the gas bacillus by the fermentation test is not difficult, and can be carried out by any one in his office without special training.[2] In protein indigestion there is an excess of putrefactive organisms. Porter and his co-workers [3] have recently developed a method for the recognition of this type. It is very possible that organisms of the butyric acid group or *Bacillus acidophilus* may be of importance. There are, however, no easy methods for recognizing these organisms and no specific treatment, if they are present.

TREATMENT

There is no place for the so-called digestants in the treatment of chronic indigestion in childhood. There is probably never an insufficiency of either hydrochloric acid or pepsin and, as pancreatin is destroyed in the stomach, it cannot possibly be of any use. The general methods of treatment have already been mentioned. Further treatment, therefore, consists primarily in regulation of the diet to fit the digestive capacity of the individual child. The element or elements of which it cannot take care must be cut down to the point where it can take care of them. This point can be determined only by the examination of the stools. The deficiency in calories, brought about by the cutting down of the amount of one or more of the food elements, must be made up by increasing the amount of the others. The amount of the element that is causing the trouble must be increased as fast as the increasing tolerance will allow. It is not enough in severe cases of chronic indigestion, due to intolerance of one or more of the food elements, to give general directions as to the diet. The diet must be laid out explicitly, and the number of grams of the offending food element allowable daily must be definitely stated. The number of calories which the child needs must also be indicated. A list showing the caloric value and the content in grams of the various food elements in the foods allowed must be given to the parents and its use explained. In my experience, almost all parents are intelligent enough to use these tables. I have had no difficulty in getting their interest and cooperation.

In the cases in which there are marked clinical evidences of fermentation, bacteria undoubtedly play an important part in the production of the symptoms. They unquestionably also play a part in the cases in which the evidences of fermentation are less marked, because bacterial fermentation is always going on in the contents of the gastro-intestinal tract under both normal and diseased conditions. What proportion of the symptoms in a given case is due to bacterial fermentation and what proportion to disturbance of the chemical processes of digestion is, however, almost impossible to determine. It is impossible, moreover, to know whether the trouble was originally due to bacteria or to disturbance of the chemical processes of digestion. In general, however, it is probable that the difficulty was not originally due to bacteria, as it is impossible to implant permanently any organisms in the intestine by giving them in the food. Fortunately, it is not important to know which is primary, because the two factors are finally active in every case.

Whether primary or not, however, abnormal bacterial activity must be stopped. It is impossible permanently to change the intestinal bacterial flora by giving bacteria by the mouth, although the flora may be temporarily somewhat modified, if the bacteria are given continuously. The intestinal flora can be changed by changing the composition of the food, that is, the flora may be changed from the acidophilic to the putrefactive by changing the composition of the food, and vice versa. Cutting down the proportion of the carbohydrates and increasing that of the protein in the food changes the flora from fermentative to putrefactive, and cutting down the proportion of protein and raising that of the carbohydrates changes it from putrefactive to fermentative. This can be proved by bacteriologic examination of the stools, but is shown equally well by the change in the reaction of the stools, the stools being acid when the bacterial flora is mainly fermentative, and alkaline when it is mainly putrefactive. Organisms growing on fat have relatively little to do with fermentation in the intestinal tract, but the products of their activity increase the acidity of the stools. Treatment by regulation of the diet on the indications furnished by the examination of the stools thus not only aids the weakened digestive powers but also changes the bacterial flora.

When the organisms of the gas bacillus group are the cause of the fermentation in the intestinal contents, something may also be done to limit their activity by the administration of organisms that produce lactic acid. The best type for this purpose is probably *Bacillus bulgaricus*. It is more effective when given in the form of buttermilk than in tablets or cultures, because it is numbers that count, and there are infinitely more organisms in buttermilk than in any tablets or little tubes of cultures. Furthermore, the buttermilk contains considerable amounts of lactic acid, which is of itself inimical to the growth of the gas bacillus and putrefactive organisms. The lactic acid forming organisms are also sometimes of benefit in the treatment of putrefactive conditions. It must be remembered, however, that the lactic acid organisms cannot change the bacterial flora permanently. This can be done only by so changing the diet as to change the character of the culture medium in the intestine. It is doubtful whether the growth of other pathogenic organisms can be influenced by the administration of any other organisms in the food.

There is no place for drugs, except for the temporary relief of symptoms, in the treatment of chronic indigestion in childhood. Cure can be brought about only by regulation of the life and diet. In severe cases the most minute attention to every detail is absolutely essential. In these cases recovery is a matter of many months, and often of years, while relapses are frequent. Recovery is, however, almost always possible, provided the treatment is careful enough and is kept up for a sufficiently long time.

2. Morse, J. L., and Talbot, F. B.: Diseases of Nutrition and Infant Feeding, p. 306.
3. Porter, L.; Morris, G. B., and Meyer, K. F.: Certain Nutritional Disorders of Children, Associated with a Putrefactive Intestinal Flora. Am. J. Dis. Child. 18: 254 (Oct.) 1919.

ABSTRACT OF DISCUSSION

Dr. Lewis Webb Hill, Boston: I have seen many of these patients treated by Dr. Morse. His results are equaled by few, partly because he has had a great deal of experience, but mostly because he is willing to take infinite pains. That is the most important thing to remember in dealing with these chronic feeding cases, to take time with them, to pay the closest attention to details and to see the child often. Even then you will often not get nearly as good results as you would like to get. The relation of the intestinal bacteria to the food in the intestine must be considered. Escherich, in 1886, first brought forward the very important fact that the types of intestinal bacteria were dependent almost entirely on the food supply, and that if you changed the character of the food supply, the kinds of bacteria in the bowel could be changed accordingly. He distinguished between two broad groups of intestinal bacteria, the putrefactive, which live on protein food, and the fermentative, which live on carbohydrate food. If the intestine is infected with fermentative, carbohydrate splitting bacteria, withdraw the carbohydrate food on which they live and substitute protein food, in order to do away with the type of bacterium that is causing the trouble. If the intestine is infected with putrefactive, protein splitting bacteria, withdraw the protein food, and substitute carbohydrate food, in order to change that type around. This conception is most important in infant feeding, not only in cases of chronic indigestion in older children, but in the case of babies as well. There is absolutely no use in dealing with these cases to try to temporize. One should figure out very accurately what the child is going to have, and give the mother an ironclad diet list. All directions should be written. I use a card about five by eight inches, with the meal times written on it, breakfast, luncheon, dinner and supper; and then I put down under each one of those headings exactly what the child is going to have for each meal. That helps a great deal The mother can tack it up in the kitchen or pantry, and follow it from day to day. When the diet is changed, a new card can be given. Never give dietary directions by word of mouth for such cases as these; always write out the directions. Trust nothing to the judgment of the mother.

Dr. C. G. Grulee, Chicago: Dr. Morse has made an ironclad statement, that you cannot introduce bacteria into the bowel by giving them by mouth. That statement should be questioned. I do not know how you are going to account for a certain phenomenon unless you admit that bacteria when introduced by mouth do show evidences of growth in the intestine. Typhoid is caused by the introduction orally of the typhoid bacillus, and certain types of dysentery are caused by the introduction by mouth of certain types of the dysentery bacillus. I suppose Dr. Morse meant to say that by the introduction of the lactic acid bacillus by mouth, we could not obtain any therapeutic results in the intestine. My experience has been rather contrary to that. It is very hard to say in a given case to what results are due, because you will probably use several therapeutic agents, but there is no scientific reason why the lactic acid bacilli introduced by mouth cannot be taken up in the intestine. Dr. Morse may say that the gastric juice is bactericidal in action. It probably is, under normal conditions, and under abnormal conditions it probably is not. The latest bacteriologic results, as obtained by the duodenal tube, and examination of the gastric contents, show that there is a very definite relation between the bacteria found in the stomach and in the duodenum, with the various types of nutritional disturbance.

Dr. L. T. Le Wald, New York: I endorse everything Dr. Morse said. My work in studying children has been along the line of the roentgen-ray diagnosis in cases of indigestion which do not yield to ordinary methods of treatment. Unless one takes into account some of the congenital anomalies of the gastro-intestinal tract, treatment of what is considered a digestive disturbance will fail to relieve. There may exist a definite obstructive lesion, that can only be dealt with by knowing the exact nature of the mechanical obstruction. In a case of persistent vomiting we found a congenital hernia of the diaphragm, with the stomach in the chest cavity, and part of the time some of the stomach would protrude into the abdominal cavity, and produce a partial obstruction, and at other times it would slip entirely up into the chest cavity, and the child would go on without any vomiting for a period of several weeks or months. That condition of recurrent digestive disturbance was immediately explained by the roentgen-ray examination, and was relieved by an anastomosis between the stomach and the small bowel; the only case on record in which the condition has been successfully relieved by a palliative operation of this sort. A case of congenital syphilis of the stomach, with a very marked narrowing of the entire stomach lumen, would never have been recognized in any other way.

Dr. Isaac A. Abt, Chicago: I agree with everything Dr. Morse said. I was particularly impressed by the fact that he recognizes that indigestion may be produced by constitutional disturbance. I doubt whether there is such a condition as indigestion, pure and simple. I believe that indigestion is but one step in the general metabolic disturbance. If you are dealing with a baby who is suffering from an excess of starch, he first possibly has indigestion, but very soon he has some more profound constitutional disturbance. He has an injury produced by starch that may show itself either as an atrophy, or possibly with a general hydremia; so that I doubt very much whether one should stress entirely the indigestion without considering the nutritional side, the general metabolic disturbance. It is not such a complicated matter to cure or to remedy these food disturbances. It is simply a matter of finding out what the difficulty is, and diminishing the amount of food ingested, or altering the character of the food entirely. Examination of the stools in my experience is not the most important element in diagnosis. A little fat may be found in a perfectly normal stool; or a little starch even, without producing any pathologic symptoms.

Dr. John Lovett Morse, Boston: If I had read the whole of that part of my paper dealing with bacteriology, I do not think that Dr. Grulee would have criticized. I do not think that his arguments apply. I was talking about bacteria in the intestinal contents. Typhoid fever is a systemic infection and in infectious diarrhea the bacteria invade the intestinal wall. I am still prepared to defend my statement that it is impossible permanently to implant any bacteria in the intestine. They will stay only as long as they are given, unless the diet is changed. If the diet is changed, it is not necessary to give them. As to the examination of the stools: If the findings in the stools are interpreted correctly, they are often of great assistance. If the examiner thinks that a few fat globules mean fat intolerance or a few starch granules intolerance for starch, he will be misled. The child, the diet, the number of stools and the life must also be considered. That is, brains are necessary here, as elsewhere, in medicine.

Infant Welfare and the General Practitioner.—There is no reason why the average practitioner, who is always an obstetrician and pediatrician as well, should not conduct a well-baby clinic in his private work as an integral part of his practice. There is no reason why he should deny the new-born child that measure of medical supervision which to a greater or less degree he accords the mother during the nine months preceding the birth of the infant. The goal of good obstetrics should be not only the delivery of the living child, but that the child should continue to possess the attribute of living. Prenatal care by the average practitioner, even if many times indifferent and inefficient, is recognized by him as an inherent right of the expectant mother. Equally rightful is the prerogative of the infant during its precarious first year to have its share of medical supervision. The socially-minded individual is largely so through instinct. Like poets, and to be more concrete, like the successful public health nurse, they are born and but rarely made. Yet the dormant and potential social instinct may be awakened into a dynamic force through stimulation and cultivation.—J. S. Wall, *Am. Child. Hyg. A. Tr.*, Nov. 11-13, 1919.

MANAGEMENT OF ACUTE APPENDICITIS DEVELOPING IN LATTER WEEKS OF PREGNANCY

REPORT OF CASE TREATED BY CESAREAN SECTION AND APPENDECTOMY *

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For the purpose of discussing the various questions which arise in the management of acute appendicitis occurring at or about the termination of pregnancy, the following case, developing within the last three weeks of pregnancy, treated by cesarean section and appendectomy with drainage, is reported:

REPORT OF CASE

Mrs. F. W., aged 25, primigravida, married two and one-half years, was first seen in October, 1919, after having passed through six months of pregnancy uneventfully. Her last period began on April 21, 1919, and labor was expected between Jan. 25 and 28, 1920. The past history was unimportant except that the patient had always suffered from slight indigestion, but never from any pain or other symptom referable to the appendix. Physical examination and pelvic measurements showed her to be normal in every way. Oct. 29, 1919, she developed headache, nausea, "heartburn," vertigo and blurring of vision. The urine contained a small quantity of albumin and a moderate number of hyaline and granular casts. The systolic blood pressure was 115. There were slight pains in the lower part of the abdomen. She was kept in bed on milk diet and was subjected to free purgation. All symptoms cleared up rapidly, and on the tenth day the urine was free from albumin and casts. The systolic blood pressure registered 100. The attack was considered to have been one of toxemia of renal origin.

January 4, patient was awakened about 1 a. m. with nausea and vomiting; she was seen at 4 a. m. The pulse and temperature were normal; she complained of slight pains over the lower abdomen; uterine contractions could be seen and felt. There was no vaginal discharge. She was given ⅙ grain of morphin sulphate and 1/300 grain of scopolamin hydrobromid hypodermically, and soda water by mouth.

At 9 a. m., vomiting was persistent and severe; the temperature and pulse were normal; no tenderness was elicited over the abdomen, but the patient complained of intermittent cramping pains. Milk of magnesia, one-half ounce, was given, and this was followed by a soapsuds enema with only fair results. The systolic blood pressure was 105; the urine showed a few hyaline casts, but no albumin; the leukocyte count was 21,000. The vomiting continued throughout the day, and by 9 p. m. the temperature was 99.2 and the pulse, 110. The cramping pains were still present.

January 5, at 9 a. m., all symptoms had improved except the vomiting. The vomitus contained bright red blood, and intense burning was complained of along the course of the esophagus. In the evening some tenderness was noted in the right lower quadrant of the abdomen, and the leukocyte count was 22,000. Vaginal examination revealed the head well down in the pelvis, with the os thick and admitting only one finger.

The continuation of vomiting, with a high leukocyte count and the absence of definite onset of labor, together with a tendency to locate pain in the right iliac fossa, raised the question of appendicitis.

On the morning of January 6, the temperature was 99 and the pulse, 90. There was no abdominal pain or tenderness. The vomiting had continued, however, and the leukocyte count was 21,500. The urine was still free from albumin; it contained only a few casts, and no pus or blood.

At 3 p. m. a consultation was held. After considering the history and after careful examination with findings about the same as noted above, we made this analysis of the situation:

1. Although the patient had suffered from toxemia of renal origin two months before, the present urinary findings did not justify such a diagnosis at this time.

2. The persistent vomiting, with high leukocyte count, and with a tendency to refer pain and tenderness to the right iliac fossa was very suggestive of appendicitis even in the absence of material elevation of temperature or increase in pulse.

3. The patient's general condition, with incessant vomiting, demanded the termination of the pregnancy.

4. We decided on cesarean section, to be followed by examination of the appendix, with its removal if found diseased.

At 6 p. m., January 6, sixty-six hours after onset, under gas-oxygen anesthesia, the uterus was delivered and carefully packed off from the abdominal cavity. The fetus was extracted, the uterine wound closed, and the uterus returned to the abdomen and still further protected by packs. The abdominal incision was retracted and the appendix located well down in the pelvis. It was acutely inflamed, almost gangrenous, covered with lymph but free from adhesions. The appendix was removed, a large cigaret drain was carefully placed through a stab wound in the right iliac fossa, and the laparotomy wound was closed.

The patient made an uneventful recovery.

IMPORTANCE OF PROMPT OPERATION

The frightful mortality of neglected appendicitis is recognized by every one, and the advisability of prompt operation on the development of an acute attack in the nonpregnant patient needs no discussion at this day.

The higher mortality which has been attributed to acute appendicitis during pregnancy is not to be charged to the appendicitis or to the pregnancy so much as to the failure to recognize the disease promptly and to treat it along well established surgical lines.

The failure to recognize the disease in the latter months of pregnancy may be due to difficulty in diagnosis, which is brought about by the enlargement of the uterus, with attendant changes in the relations of the intra-abdominal organs.

The delay in prompt operation is most often due to the obstetrician's hesitancy in undertaking any serious operation which may be followed by abortion or premature delivery, and, to a very great extent, to the attitude of those obstetric teachers, who, until recently, have held that while operation is indicated in all cases occurring in early pregnancy, only in perforative or gangrenous cases should operation be performed during the last four mouths.

No teaching more dangerous to the pregnant woman with appendicitis could be held, and we heartily approve the position of De Lee,[1] who states in his latest work that "appendicitis during pregnancy should always indicate immediate operation, and that even in cases of doubt, operation is the safer course;" of Kelly [2] that "because of the well recognized clinical severity of any attack of appendicitis associated with suppuration during pregnancy, prompt interference is demanded as soon as a diagnosis is clearly made," and of Hirst,[3] who urges prompt operation and points out that "if an attack occurs late in pregnancy, in con-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. De Lee, J. B.: The Principles and Practice of Obstetrics, Philadelphia, W. B. Saunders Company, 1915.
2. Kelly, H. A., and Hurdon, Elizabeth: The Vermiform Appendix and Its Diseases, Philadelphia, J. B. Lippincott Company, 1909.
3. Hirst, B. C.: A Text Book of Obstetrics, Ed. 7, Philadelphia, W. B. Saunders Company, 1912.

sequence of intense congestion and increased intra-abdominal pressure, it is likely to be very severe, with early virulent peritonitis." Findley,[4] in a paper before this section in 1912, quoted the statistics of Wagner, who gives the mortality in nonoperative severe cases complicating pregnancy as 77 per cent., as contrasted with 6.7 per cent. in cases of all grades of severity in which operation is performed within the first forty-eight hours, and expressed the belief that reduction in mortality would no doubt occur if these patients were operated on within the first twenty-four hours.

John B. Murphy, in discussing Findley's paper, emphasized two facts: First, when the condition was diagnosed early and remedied early the mortality was almost nil; second, when the condition was diagnosed late the endeavor to remedy was also late, the mortality was colossal. He pertinently asked: "If we can diagnose the condition early, what is the excuse for waiting?"

In the earlier months of pregnancy, appendicitis is not infrequent; its diagnosis offers no special difficulties, and operative technic does not differ from that employed with the nonpregnant. Abortion occurs very infrequently, and there is little likelihood of its happening with the patients operated on early, without drainage, and with the minimum amount of intra-abdominal manipulation.

Reported cases of acute appendicitis developing at or very near the end of pregnancy or with the onset or in the course of labor are rare, and the difficulties of diagnosis may be great.

CASES IN THE LITERATURE

In reviewing the literature as found in the abstracts of The Journal since 1912, only four such cases are noted, and only two of these are abstracted or reported in full.

In Wallace's case[5] at full term pregnancy, the attack began on Saturday night and was thought to be the onset of labor; on Sunday afternoon appendicitis was diagnosed; on Monday at 1:30 p. m., about forty hours after onset, the perforated appendix was removed and drainage was instituted. On Tuesday at noon, twenty-two hours after the operation, labor set in and was completed at 12:30. Uneventful recovery took place.

In Grattan's case,[6] in which the expected date of confinement was July 18, the onset of the attack occured at 1 a. m., July 15, with epigastric distress; at 7 a. m., July 17, abdominal pain in the right iliac fossa caused suspicion of appendicitis; also at the same time definite dilation of the cervix, with characteristic intermittent girdle pains indicated the onset of labor. Operation was performed, 12:30 a. m., July 18, about seventy-two hours after onset; a gangrenous appendix was removed, with drainage of the abdomen. Labor pains came on half an hour after the regaining of consciousness, and labor was completed at 10 a. m., the 18th. The mother recovered after a very stormy convalescence, but the baby died.

PROBLEMS THAT ARISE

When appendicitis develops at or near the end of pregnancy, several serious problems arise: (1) that of diagnosis; (2) the question of operation; (3) whether or not pregnancy shall be terminated; (4) the question: Is the better plan to empty the uterus before removing the appendix, or to remove the appendix first? (5) What method shall be employed in terminating pregnancy?

Diagnosis.—Some time must inevitably be lost in deciding that any pain present is not due to the onset of labor alone, but may be due to some cause outside the uterus. By careful examination, one must exclude hematogenous infection of the kidney, pyelitis, ureteral obstruction, gallbladder disease, and inflammatory affections of the appendages. Repeated observations must be made of pulse, temperature and leukocytes. Any tendency whatever to refer the pain to the right iliac fossa, or the eliciting of any tenderness or rigidity in this region, must be given special weight in view of the fact that these signs are frequently obscured by the increased size of the uterus.

Operation.—From what has gone before, we have made our position clear that operation is indicated when a diagnosis has been clearly made. In some instances, operation will, of necessity, be exploratory in character and may have to be undertaken on the ground that severe, persistent abdominal pain, not relieved by the usual simpler remedies, demands operative investigation, bearing in mind the opinion of De Lee, already quoted, that in case of doubt operation is the safer course.

Shall Pregnancy Be Terminated?—At this late period, the life of the child is not endangered by terminating pregnancy, and we believe that this should be done.

Neither Cragin[7] nor Williams[8] favors the emptying of the uterus from above or below in dealing with the appendix.

Hirst[3] thus states his position:

> If there is any reason to suspect suppuration, the median incision is required in operating after the fourth month, and the uterus should be lifted out of the abdominal cavity to detect possible areas of suppuration deep in Douglas' pouch or on the left side. If it is necessary to deliver the uterus from the abdomen after the seventh month, it should be emptied by cesarean section before it is returned. If drainage is required, the uterus should usually be amputated.

As to whether the uterus should be emptied first or the appendix removed, it seems to us better to terminate labor first and remove the appendix immediately thereafter. All writers agree that the removal of an appendix in the presence of the full term uterus is usually very difficult. Furthermore, if the placing of the drains is necessary, the subsequent change in intra-abdominal relations brought about by uterine contractions, and by the diminution in the size of the uterus after delivery, may so disturb the operative field as to cause the spread of infection to all parts of the abdomen, while the maintenance of a quiescent condition would allow the formation of protective adhesions with subsidence in intraperitoneal inflammation. With the uterus empty and contracted, the appendix may be located and removed with greater ease, and there will be but little danger from interference with the peritoneal toilet after the operation is completed.

Method by Which Pregnancy Shall Be Terminated.—No slow or uncertain method should be employed. While a slowly induced labor is in progress, suppura-

4. Findley, Palmer: Appendicitis Complicating Pregnancy, J. A. M. A. **59**: 612 (Aug. 24) 1912.
5. Wallace, C. J.: Ruptured Appendix at Full Term Pregnancy, J. A. M. A. **64**: 739 (Feb. 27) 1915.
6. Grattan, J. F.: Gangrenous Appendicitis Coincident with Labor, Surg., Gynec. & Obst. **29**: 457 (Nov.) 1919.
7. Cragin, E. B.: The Practice of Obstetrics, Philadelphia, Lea & Febiger, 1916.
8. Williams, J. W.: Obstetrics, New York, D. Appleton & Co., 1917.

tion and peritonitis may be progressing much more rapidity. If the patient is a multipara and the obstetrician is sure that he can accomplish delivery promptly by accouchement forcé, this may be considered. If the patient is a primipara, or if there is any doubt about immediate delivery in the multipara, cesarean section, with appendectomy, should be performed.

CONCLUSION

We are entirely opposed to the teaching that operation in the latter months of pregnancy should be reserved for perforative or suppurative cases.

The pregnant woman at this period of pregnancy should be given the same chance of recovery that is offered the patient who develops appendicitis in the earlier months, namely, an early diagnosis and prompt removal of the appendix, not after but before perforation, gangrene or peritonitis has developed.

Jefferson County Bank Building.

ABSTRACT OF DISCUSSION

DR. ARTHUR H. CURTIS, Chicago: I agree with Dr. Mason that every actively diseased appendix must be removed irrespective of the stage of pregnancy. Not only the acute appendix, but every appendix should be removed, because one never can tell when serious complications may arise. As to the advisability of performing a cesarean section on these patients: If the appendix is accessible, in the absence of distinct contraindications for cesarean section, I would be inclined to leave the uterus without manipulation. I see no reason why, if we close the abdomen thoroughly and carefully, labor should not go on in a normal way. If we perform cesarean section we are apt to have trouble from unsatisfactory closure of the uterine or abdominal incision. In such cases it would be a pretty good plan for the doctor to consider local anesthesia. If ever there is need for local anesthesia, it is in such cases as these. If we decide not to take out the fetus and if the uterus is left alone, we should be extremely careful in the closure of the abdominal wound. Under such circumstances it is best to use strong tension sutures.

DR. FRANCIS LE S. REDER, St. Louis: It is well to give instructions to the woman who expects to become pregnant to subject herself to the most thorough examination before conception occurs. If there are any evidences of former attacks of appendicitis, it is better to remove the appendix in the interim than to allow her to go on and take this risk. Up to the fourth month of pregnancy, the appendix can be removed with comparative safety, no matter what its condition. From the fourth month to the seventh month there is some danger. From the seventh month on, the situation is a very complicated one and calls for the exercise of good judgment on the part of the attending physician in determining the treatment. It has been my experience that appendicitis at this time in a pregnant woman is not of the same virulence as when it occurs prior to that time. Although I have urged operation in a number of such cases, it was declined and these women went on to full term without any untoward consequences. If it is extremely dangerous to this woman's life to allow the condition to go on, what should be our method of procedure? I am inclined not to be hasty; to watch and wait; as long as the patient remains within the limits of safety, as far as your surgical judgment will dictate, no surgical intervention becomes necessary. If the case goes on to suppuration, and the pus can be palpated in the culdesac of Douglas, puncture through the rectum and evacuation of the pus, will sometimes suffice and not disturb the pregnant uterus. I have had two successful cases treated in that way. Ventral hernia is a secondary matter. The safety of the woman must be considered primarily. The hernia can be repaired later when the woman is in a safe condition for such repair

DR. DAVID ROSS, Indianapolis: Whether to operate for appendicitis during pregnancy is a matter of individual judgment. However, what impressed me most in the paper was the suggestion to do a cesarean section in cases of rupture of the appendix. Some years ago the late Dr. Beckman answered the question: "When is it safe to do a multiple operation?" by saying that he could tell better when it was safe not to do one. He advised never to operate in the presence of an infection or even when infection was suspected. I certainly would not submit any woman to a cesarean section in the presence of a ruptured appendix.

DR. JAMES M. MASON, Birmingham, Ala.: One-half the textbooks on obstetrics advise that when appendicitis occurs early in pregnancy, the appendix should be removed; the other cases should be left alone unless suppuration occurs. My position is—no matter what the stage of the pregnancy, if appendicitis develops the pregnant woman is in as dangerous a condition as the nonpregnant woman would be. No one can tell which appendix is going to rupture and which is not. The accepted surgical decision is that patients with acute appendicitis should be operated on as early as possible. Murphy said we can diagnose the cases early and we should operate early. At the present day cesarean section is exceedingly simple and safe. If you get a case of acute appendicitis in a pregnant woman and want to terminate the pregnancy that way, it is a simple matter to open the abdomen, close the uterine wound, remove the appendix, and, if there is no suppuration, close the appendiceal wound. Late in pregnancy, a few hours before labor is going to come on, it is very much safer to do as Hirst says, open the abdomen, remove the appendix, amputate the uterus with every chance of the patient getting well with free abdominal drainage. If you leave the uterus intact and do an appendectomy with drainage, there is great risk of labor coming on two or three days afterward and to have a localized peritonitis where the contractions of the uterus may break up adhesions. If you do a transperitoneal cesarean section, there is no reason why an extraperitoneal section cannot be done and appendectomy carried out. As for the use of local anesthesia, it has a great place in cesarean section, but gas-oxygen, especially if the woman is suffering from nausea, is the best anesthetic to use. Concerning the virulence of the infection, the cases I have seen early in pregnancy were subjected to operation before they were far advanced. However, Murphy, Kelly, Hirst and many others have said that if acute appendicitis develops late in pregnancy we may look for the rapid spread of virulent appendicitis. I believe that if appendicitis occurs in the last month of pregnancy, termination of labor and removal of the appendix is indicated.

CONTROL METHODS IN THE TREATMENT OF DIABETES MELLITUS*

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This discussion presents the treatment of diabetes mellitus from a point of view not usually employed in consideration of the subject. Diabetes mellitus is a much misunderstood disease, but the difficulties of treatment are often greatly exaggerated. Difficulties have arisen mainly for two reasons: First, the course of the untreated or poorly treated disease is confounded with the results of treatment; second, metabolic investigations have been confused with practical therapy. Modern improved methods of treatment have increased the length of life of the diabetic and have cleared the clinical picture of the disease as treated under improved conditions. The improved methods mainly have been applications of the metabolic investigations of laboratory and ward; but successfully to treat an individual case does not necessarily imply knowledge of these investigations if their appli-

* From the Medical Clinic, Michael Reese Hospital.
* Read before the Chicago Medical Society, May 5, 1920.

cation is understood. A patient with diphtheria may recover even though the physician who administers antitoxin never heard of Behring or knew that George Washington died of diphtheria.

One reason why the treatment of diabetes has been difficult is the apparently inherent difficulty in conceiving of dietetics as a practical procedure on a scientific basis. Diabetes is a functional disease of the pancreas primarily involving carbohydrate metabolism and ultimately extending to the metabolism of fat and protein, and treatment depends on the degree of functional impairment. A natural analogy to cardiac conditions is immediately seen. In aortic insufficiency, for instance, there is no cause for treatment until there is an actual functional disturbance of the heart as evidenced by signs of decompensation, either early exertion dyspnea or a final complete break, perhaps involving all the organs of the body. No one would attempt to treat a patient with an aortic diastolic murmur who has no signs of decompensation in the same way as he would treat the same patient two or three years later with a break.

The only essential difference in therapeutic principle between diabetes mellitus and aortic insufficiency is that diabetic therapy is practically confined to food, and diet is traditionally more difficult to understand than is digitalis. Just as there are methods of control in the handling of cardiac cases, so there are similar, if not identical, methods of control in the treatment of diabetic patients: methods of control which are simple and logical, which change the treatment of the disease from a hit and miss affair with uncertain results to a scientific procedure of almost sure results in most instances. I shall discuss these methods of control and show by case reports how improved therapeutic results can be obtained by the practical application of some surprisingly simple procedures.

IMPORTANCE OF THE HISTORY

Even at the risk of repeating facts known to all, or even of laying undue emphasis on what may seem apparent, experience leads me to say that the first and most important method of control lies in a careful history and physical examination. In this respect diabetes differs in no way from other diseases of internal medicine, and yet time and again I have seen treatment of the diabetic undertaken by the physician who had made no effort to ascertain any facts in his history, which from the very nature of things must have influenced his treatment had they been known. For example, analysis of case records shows that diabetes in the young is usually the severest type of the disease, but that when the young diabetic has a family history dotted with diabetic relatives his chances are improved. Further analysis shows that the later in life the disease starts the milder it is likely to be, and a still more important fact can be brought out from knowledge of the length of time a patient has been sick, the nature of his symptoms, and the kind of treatment he has undergone. To emphasize these points, I will cite two cases:

Case 1.—A man, aged 22, was seen in February. Sugar was discovered accidentally by his father, a physician, who noted a markedly increased appetite and increased thirst when the boy came home from college for a vacation. The specimen showed a specific gravity of 1.050, an excretion of about 6 liters containing 8 per cent. sugar and a trace of acetone. The blood sugar was 0.28 per cent. Everything pointed to a severe case, but his history showed, first, a family history of diabetes, and secondly, a short duration of his own symptoms. On the basis of these two facts I volunteered the information that treatment would not be difficult and, indeed, it took only three days to get this boy sugar free and to keep him so.

Case 2.—Contrast with this a woman seen several years ago, who on the way from New York developed erysipelas. When I saw her she was quite sick, with high temperature, fast pulse and marked toxic symptoms. The urine contained more sugar, more albumin, more acetone and more diacetic acid than I had seen in a long time. The woman was too sick to give much history, and the natural interpretation of the case would have been that some of her urinary abnormalities had been caused or increased by her erysipelas. However, to quote her husband, "she'd had all those things for years and had remained in apparent perfect health despite this abnormal urine." Practical judgment based almost entirely on history then indicated the therapeutic procedure, which was definitely to make no radical changes in the woman's method of living. She recovered. However, had we not taken the history into consideration, and had we instituted treatment on the procedure indicated by the urinary findings alone, it seems to me we would have spoiled any chances for recovery this woman may have had.

PHYSICAL STATUS OF THE PATIENT

In recent years when men have spoken and written of this and that kind of "cure" for diabetes, it has been my experience that dangerous practices have resulted from the indiscriminate use of any particular method for all patients with diabetes. It is no more logical to give every diabetic a set of pink and blue pills than it is to give every diabetic the same diet list. When starvation first became fashionable other things were neglected, and in the hands of men less skilled than the advocates of the starvation method many a patient with exophthalmic goiter, pulmonary tuberculosis, nephritis or obesity was made definitely worse. No treatment of diabetes should ever be started unless everything possible is known about the physical status of the patient. The individual with a big reserve of fat offers an entirely different therapeutic problem than the thin, highly nervous woman with tachycardia, or the older person with arteriosclerosis and albuminuria. The records of two patients will illustrate how the physical status indicates the proper procedure:

Case 3.—A man, aged 50, who had diabetes of five years' standing, had within the last few months lost an undue amount of weight and was coughing. Physical examination revealed a rather large area of pulmonary tuberculosis in the right lung. He was put in the hospital and his diet was never allowed to go beyond his maintenance level (Mosenthal). He was kept at complete rest, and very gradual methods were employed to reduce the glycosuria. It took a long time, but within four weeks the pulmonary condition was quiescent, the urine was normal, and his general physical condition excellent. He left the hospital in better shape than he had been in for years. But several months later, in his own Canadian town, he transgressed his diet, and sugar reappeared in his urine. To quote the patient's words, the doctor did not examine him, but starved him to death. The expected happened. He became sugar free, but his cough and pulmonary findings increased. He lost weight, and when I saw him a month later he was a wreck of his former self.

Another case illustrates the value of the physical examination:

Case 4.—A stout, highly nervous woman, aged 40, with diabetes of ten years' standing, with albuminuria and acetonuria, asked about five years ago that I put her under the starvation treatment. The result was a quick and dangerous acidosis, to overcome which glycosuria was again produced, and the patient was in no better condition than before treatment was started. A few months ago the same patient was

subjected to an intense nervous shock and decided to enter the hospital for a period of complete rest. Because of her excess weight the only food change made was a complete elimination of fat, with the result that she became sugar free, acetone free and albumin free, for the first time in ten years. This was unquestionably due as much to the complete mental and physical relaxation of the high tension patient as to the removal of fat from her food.

OTHER ELEMENTS TO BE CONSIDERED

If these two factors in treatment, namely, history and physical examination, are clearly understood and their importance not neglected, the rest of the treatment of the diabetic is a matter of careful correlation of clinical condition, food intake, and the results of some simple laboratory findings. The identification of the reducing substance as glucose is necessarily the first step in the laboratory work. The amount of the reducing substance is even less important than certainty regarding its nature. The presence or absence of signs of acid intoxication then follows, and the tests for this are easy clinical matters. The sodium nitroprussid and ferric chlorid urinary tests, with or without ammonia determination, give information of the greatest value. But supplementary evidence of acidosis can be obtained by use of the Marriott apparatus for testing alveolar air. This test is clinically accurate, and is simpler to perform than a stain for tubercle bacilli or even than an accurate white count.

As a matter of fact, the treatment of diabetes needs no more elaborate laboratory study than is here outlined. As I have already mentioned, we must distinguish between the scientific study of the metabolic disturbance in the disease diabetes and the actual treatment of the individual patient with diabetes mellitus. The former requires well equipped laboratories, well trained technicians, and men interested in and anxious to pursue such a study. But in practice such a study is actually far removed from the absolute needs of the patient. It is true that the advance of knowledge concerning the disease depends on such intensive investigations, but it is not necessarily true that the course of treatment of the average diabetic need be influenced by the lack of opportunity for this intensive work.

Nothing has been said concerning blood chemistry, but the study of blood sugar and of other constituents of the blood in diabetes has formed a chapter of the greatest interest and certainly has furnished information of the greatest value. Hyperglycemia is always present in a true diabetic when he is passing sugar, and a study of the blood sugar will show that in the course of treatment blood sugar changes are likely to precede urinary changes and in this respect furnish information of actual practical therapeutic value. The same thing may be said of a study of the retention products causing acidosis in the diabetic. And the blood sugar study has become so simplified of late that it can be carried on in a comparatively easy way in a well equipped office.

Although it is not my purpose to extend this discussion into the details of management of the individual diabetic, I will abstract two cases in which therapy was improved by ascertaining relative values:

CASE 5.—A lad, aged 15, living out of town, who had been under observation for two years and was exceedingly intelligent, found that a sudden drop in his tolerance had occurred which he was unable to explain. He sent his diet list and twenty-four hour urine. The urine contained sugar, but no acetone bodies. Analysis of the diet compared to his tolerance diet when he left the hospital two years before showed considerable excess of fat. Within forty-eight hours after entering the hospital the patient became sugar free on exactly the same diet which he had had except that fat was considerably reduced. His blood sugar also became normal and he left the hospital in a short time with considerably increased tolerance. This case illustrated the necessity of analyzing food intake.

CASE 6.—A woman, aged 61, with diabetes, was operated on for acute appendicitis. Statistics show that there is nothing more dangerous to the life of the diabetic than an acute appendicitis. The fear of the dangers caused the physicians to give rather large doses of carbohydrates and of alkali in the hope both of avoiding acidosis and of treating it if it occurred. The patient developed a pelvic abscess, and had a considerable glycosuria, but no acidosis, and a very marked gastro-intestinal upset. When I saw her it was perfectly apparent from her history that her diabetes was mild; the urine showed no acetone bodies, and the blood sugar indicated that her body was pretty well saturated with carbohydrate; the alveolar air determination was normal; and she was vomiting all the food given her. The line of treatment was pretty definitely indicated. For a period of twenty-four hours nothing was given by mouth except ice pellets, the bowels were emptied by an enema, and then she asked for food. The urine still showed some sugar, greatly reduced, however, and there was still no acidosis. Then her diet was gradually built up, but never high enough to produce glycosuria. The patient made a complete recovery, and left the hospital to all intents and purposes a normal woman with a fairly liberal diet.

If I have made myself clear so far, it should be a comparatively simple matter to plan a set of principles for guidance in the treatment of the individual diabetic. It will be evident that the first and perhaps most urgent need of proper therapy is individualization of the patient, individualization based on a combination of the data obtained from the methods of control already outlined. The patient with a mild case of diabetes will immediately classify himself as one who on an excessive amount of carbohydrate intake passes sugar without acetone bodies and without marked historical or systemic changes. The severe case will likewise fall into its class from actual evidence, such as age at onset, rapid course, loss of weight, perhaps difficulty of being rendered sugar free, and clinical and laboratory signs of acidosis. The second principle is to get the patient sugar free without producing or increasing an already existent acidosis. In the mild case this is done simply enough by attention to carbohydrates, which, gradually reduced, will almost invariably result in an aglycosuric urine. In the severe, or even in the doubtful cases, in the presence of acidosis or threatened acidosis, the cautious physician will leave the carbohydrates alone and devote his attention to the fats. It is, indeed, surprising how often elimination of fats in the diet results not only in immediate reduction of acidosis, but also in the diminution or even disappearance of glycosuria. It is true that some of the more severe cases, already rendered free from signs of acidosis, require the complete absence of food before sugar disappears. Any patient, no matter how severe his case, can and should be made aglycosuric. And it is only by recognizing the truth of this that it is possible to fulfil the third requirement in treatment, namely, increase in the patient's food tolerance. It is a rule of almost absolute certainty that as a diet is reduced, so is it built up.

Only one more matter need be discussed, the control of which is as necessary for successful therapeutics of the diabetic as is anything I have thus far discussed: the matter of intelligent cooperation by the

patient or by some member of the patient's family. If we wish to make any permanent impress on the diabetic's life, we cannot do it by a two or three weeks' stay in an institution, no matter how scientific our efforts or how brilliant our results. The patient must be told what is being done for him, and he must understand what is being told. There is no use in talking in the language of the laboratory to a patient who understands only the language of the kitchen. We must either teach him the new language or translate our Greek into understandable English.

CONCLUSIONS

This bird's eye study of the diabetic problem justifies these conclusions:

1. The diabetic, like any other patient, must be considered as an individual.

2. The history, physical examination and laboratory data are equally important in establishing a basis for treatment.

3. Treatment consists of rendering a patient free from sugar and acetone bodies and increasing his tolerance.

4. The patient's cooperation is essential to any permanent results.

5. Under such a plan of treatment the lives of some diabetics will be saved, of many will be prolonged, and of most will be freed from distressing complications.

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RELATION OF ACQUIRED FOOD DISLIKES OF CHILDHOOD TO DISEASES OF MIDDLE LIFE *

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What I am to present is not a hypothesis formulated from a study of case histories, nor is it a set of statistical data gathered to substantiate a preconceived theory. It is merely a conclusion that recently unfolded itself in my mind as an illuminating interpretation of general observations of the effect of food on life, first as a general practitioner, who was much baffled by the metabolic disorders of middle life, and later as a pediatrician who observed the tendency of many children to form positive dislikes for certain of the essential foods.

The very probable relationship between the food dislikes acquired in childhood and the pathology of middle life, while not capable of immediate scientific demonstration, should, I believe, be borne constantly in mind by both the pediatrician and the internist. The general evidence which appears to establish such a relationship is what I desire to present.

That which is of great importance in the rational interpretation of the clinical phenomena of nutrition is the background against which such phenomena are viewed. Therefore, I shall first sketch the background, then set up the general evidence of observation, and then bring them into focus from a final conclusion.

Whatever be the nature of life, for practical scientific purposes the whole of it can be expressed in terms of matter and energy. Huxley viewed a living organism as a whirlpool through which there flowed a never-ending stream of matter and energy. Certain it is that the flesh of us, created out of the stuff of which our environment is made, is no more than a stabilized system of colloidal matter within which glows the protoplasmic fire of life. Visualized against the deep, broad background of biologic chemistry, the human organism becomes revealed as a fearful complexity of interrelated cellular systems, of continuous atomic and molecular activities and energy transformations, of actions, reactions and interactions, between known and unknown catalytic agents, hormones, enzymes, etc.

With a speed and orderliness that defy laboratory imitation, the life processes go on so long as the inflow of raw material is unbroken. Broadly speaking, to this inflow of raw material, of air, water and food, we give the name nutrition. And we pediatricians are nutrition experts; we stand at the headwaters of life, as it were, and observe the quality and quantity of raw material that begins its flow into the new-born. We know the effect of food on life. We know it better than the internist can ever know it, for we face the simple problem. From birth to adolescence we watch the immature human organism mold itself to its food. We are not confused by a multiplicity of etiologic factors, as is the internist. The baby reflects his diet. A balanced diet means a balanced baby; an unbalanced diet, an unbalanced baby.

We particularly are familiar with the pathologic condition that comes from the lack of essential food elements. And here is a point I wish to stress: We know that this pathologic condition is not always the *immediate* effect of a deficient diet. Put 100 babies on an exclusive diet of sweetened condensed milk and visualize the result. A few will thrive and reach the age of 11 or 12 months before showing signs of malnutrition; others will reach the age of 9 or 10 months in fair health and then show signs of rickets; others will become rachitic as early as the third month; after a few months, one or two may develop scurvy; others will do famously for several months and die suddenly from an acute sugar intoxication; and all along the line from the third month on, a large percentage will sink into a hopeless state of marasmus from persistent vomiting or fermentative diarrhea.

These children sicken and perish, not from what they eat, but from the constant lack of essential food elements and the absence of those mysterious "chemical messengers" which are so vitally important in the laboratory of life. The effect of these deficiencies is, in most cases, gradual and cumulative, weeks or months elapsing before the infant machine shows serious crippling or a sudden explosion, as in acute sugar intoxication.

We know, too, that it is not uncommon to encounter a feeding case that has been malfed to the point at which permanent damage seems to have been done to its chemical machinery; and though the needed food elements are supplied, the capacity for their digestion and assimilation are but partly restored and the child remains a weakling.

From observation of the dietary habits of adults and children in general, three facts stand out prominently:

1. Almost without exception, the adults and children who possess the red blood and vigor of health are those who eat a variety of foods. They may eat

* Read before the Section on Diseases of Children at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

irregularly and consume much of what is commonly called "trash," but their appetites for the essential foods are unimpaired. Rarely do I encounter such a healthy adult or child who dislikes milk, eggs, fresh meats or green vegetables. The more I have inquired as to the diets of these healthy persons, the more I have noted the almost constant presence of one class of food, the green vegetables. Judged from its almost constant seasonal presence in the diets of healthy Southerners, the green vegetable ranks high among the essential foods, probably above milk after the fifth year. Certainly, a diet that excludes both green vegetables and milk comes dangerously close to being deficient; if fresh meats are also excluded, I believe that such a diet will lead to serious metabolic disorders if persisted in over long periods of time.

2. A great many children, perhaps the majority, appear to be able to while away the between meal hours with ice cream cones and all-day-suckers without impairing their appetites for the essential foods. With such children we pediatricians have little to do except to have them pointed out to us as numerous and glaring exceptions to our rigid dietary rules. However, we have a great deal to do with the large percentage of children who do not fall into this favored class.

In its first year the well fed, rapidly developing baby gets no nourishment except from the breast or bottle. His diet is well balanced and he shows all the enviable characteristics of physical and mental equilibrium. In the second year he comes into possession of language, of his locomotive mechanism and of the strong desire to taste everything in his immediate environment. Then comes the anxious question, What may the baby eat? If parental discipline is strong, all may be well; but if the entire household bows down in idolatrous obedience to every whim of his adventurous palate, the baby comes more and more to satisfy his hunger with those foods that taste best, and so his dietary habits are formed, ranging from mild dislikes for essential foods to alarming perversions.

Many times I have seen scrawny, anemic, irritable little children slap aside the life giving foods and cry for candy, pickles, catsup or coffee. They possess a craving for these things to the exclusion of all others.

Perhaps the commonest type of feeding cases I see is that of children from 4 years up who live almost exclusively on carbohydrates. All present varying degrees of the same clinical picture, lassitude, irritableness, secondary anemia and constipation—in short, chronic intestinal indigestion. I know in some cases, and have been informed by the parents in others, that the majority of such children were in perfect health in the first and second years of life, with normal appetites and normal digestion. But somehow they gradually had turned more and more to the palatable sweets and starches, and developed a mild or positive dislike for milk, eggs, fresh meats or green vegetables.

The treatment of these cases is simple enough. We need not remove the starches and sweets from their diet. Regular feedings and the addition of that which is lacking is all that is necessary to restore health. But we know too well the difficulties encountered in a good percentage of such cases, that nothing short of complete and permanent removal from home environment and influences will effect a cure. And we know that some of these patients do well for a time, or as long as maternal discipline obtains, and then gradually lapse into their old habits of diet.

Most of these carbohydrate children do not suffer any serious impairment of health during childhood. Owing to the flexibility and adaptability of youth, they pass into adolescence in fair shape, slightly anemic, perhaps, inclined to be constipated and vaguely conscious of the presence of abdominal viscera that now and again fail to function in their accustomed, automatic harmony.

3. A surprising number of sufferers from the diseases of middle life confess to food dislikes that date back to childhood. I refer only to those functional and organic disturbances which have no bacterial etiology and which clearly are brought about by some fault in the body metabolism. I have questioned many of these "chronics" who haunt the physicians' offices, likewise many adults of unhealthy appearance. It is a difficult matter to learn exactly what an adult eats, but comparatively easy to determine his dislikes. By getting at their food dislikes I have found that the great majority of those middle aged sufferers I have questioned have lived for years on deficient diets. They have always liked the carbohydrates, but eat sparingly or not at all of milk, eggs, fresh meats and green vegetables. Many who say they like vegetables refer to potatoes; and those who say they like meat refer only to ham and bacon.

CONCLUSION

We are familiar with such pathologic entities as rickets, scurvy, pellagra and beriberi, which result from deficient diets over varying periods of time, but we do not, I believe, recognize often enough that the deficient diet is the underlying foundation of more varied and mysterious ills of man than any single causal agent in the whole range of pathology; that of all etiologic factors it is the most difficult to recognize in its masked and remote manifestations, in its gradual, cumulative action on organs and tissues over long periods of time. I believe that in the acquired food dislikes of the child, in its early start on an unbalanced diet, in the long continued total or partial absence of essential food elements we see the explanation of many of the metabolic disorders of middle life.

I believe it to be highly probable that not a few cases of such middle life affections as hypertension, chronic Bright's disease, visceral ptosis, gastric and duodenal ulcers, etc., are but the remote, graver manifestations of that blighting etiologic factor, the symptoms of which we pediatricians are quick to recognize in their incipiency—the deficient diet. Certainly we see quite a few older children who present mild or pronounced symptoms of malnutrition from no other reason than that they have acquired dislikes for essential foods. Some of these children cannot be made or trained to eat properly, and pass out of our care. If they do not in later life develop serious metabolic disorders, by all the laws of life they ought to.

So convinced am I of the ultimate harm that is foreshadowed in the food dislikes of childhood that I have come to view the future welfare of these patients with something of the grave concern with which I look on a valvular heart lesion or a scarlet fever nephritis, for the tendency of such children is to relapse into old habits of diet. The carbohydrate diet does not contain the potential elements essential to longevity, nor is the human machine capable of

making its normal life cycle on an unbalanced fuel. Just as certain as the child passes into adolescence on a deficient diet and with the first faint blight of malnutrition on him, just that certain will he some day face the internist to learn the rigid conditions under which he may hope to eke out the remnant of a salt-free and joy-free existence.

ABSTRACT OF DISCUSSION

Dr. William Walton Butterworth, New Orleans: Dr. Rice presents a new viewpoint concerning some of the disturbances of nutrition. While it may be difficult for him to prove his assertions, there is much in his paper to command attention. Take rickets, for example. While it may not be brought about necessarily by an insufficient amount of food, improper food certainly has something to do with it. The results are seen not only early in life, but likewise in later life. Then, again, pellagra is believed to be due to certain deficiencies of food, or the active principles which are necessary to proper development. Not only is it of slow onset, but it may be prolonged in its effect. Changes of metabolism may not be very striking at first, but they make such lasting impressions on the organism that permanent results are seen later in life.

Dr. Fritz B. Talbot, Boston: There is no doubt that many of the diseases of adult life find their origin in childhood. I have noticed that in a certain group of children there are food dislikes on a good, well balanced diet. In my experience, those food dislikes come in certain types of families. They come in the type of family in which there is a history of asthma, eczema and hay-fever, and sometimes urticaria. In those families, of course, we know that we often have idiosyncrasies due to anaphylaxis. And we have always to bear in mind, in considering food dislikes, the fact that it may be due to anaphylaxis. Do not put a person down as a fool who says that he cannot eat eggs, until you have proved that he is not anaphylactic to eggs.

Dr. May G. Wilson, New York: In 1916 I made a dietetic study in the public schools of New York. The results of my study corroborate some of Dr. Rice's statements. I found that green vegetables, other than potatoes, tomatoes and lettuce were absent from the diet. In the grades just higher than the kindergarden milk was being left out and tea was being substituted. Then still higher condiments were being used. The acquired dislike of essential foods is noted as we pass from the kindergarden to the higher grades.

Dr. O. M. Gilbert, Boulder, Colo.: It is the almost universal experience when I attempt to outline the diet for my tuberculosis patients to be told that the patient does not like milk or eggs. I have become impressed with the fact that this dislike of certain foods must have some bearing on the nutritional factors which predispose to tuberculosis. It is true that a few patients have a tendency to an anaphylactic reaction against milk or eggs, but with the average person it its only a matter of taking time and using patience and perserverance, to become accustomed to them. I have come to disregard almost the likelihood of anaphylaxis, and to insist on the patient gradually adjusting himself to the proper diet. Irving Fisher showed the bad effects of excess of protein diet in people past middle life; but to my mind it is well to have the factor of safety, so to speak, on the side of the proteins in the formative period of life. And I cannot help but feel that this lack of a proper protein element in our diet is by no means a negligible factor, in the production of this metabolic condition, which predisposes to the development of conditions not only like pellagra, but of tuberculosis.

Dr. C. Hilton Rice, Jr., Montgomery, Ala.: The conclusion I presented came to my mind only too recently for me to have kept statistics on it; but I have always had a curiosity as to what people eat, particularly the healthy child and the healthy adult. One of the most common diets of children in Alabama, particularly in the rural districts, is bread and syrup. The people of the West and North do not see that. If it is not bread and syrup, it is too much eating of cakes and candy and ice cream cones between meals; much of the ice cream we get is a mixture of cornstarch and vanilla. The eating of sweets between meals destroys the appetite for all food, except sweets and starches. These children will eat rice and cereal foods, but they do not like green vegetables. They do not like fresh meats. Very often they do not like eggs, and in many cases they will not drink milk. They have no idiosyncrasies for these foods, because they previously had taken them without harm. Mothers and fathers have some fear that the child may have inherited indigestion. They say that they never liked green vegetables; that they have not been drinking milk since they were children. Some will not even eat butter or anything that comes from the cow. I believe that we can look forward and see the effect of food dislikes of childhood, and their relationship to the metabolic diseases of middle life, better than can the internist, who seeks, from fragmentary data, to visualize the past history of his case. If he would look back to us, to explain the etiologic factors, we, as pediatricians, could tell him that a certain percentage of children leave us on deficient diet, for no other reason than they never were trained to eat properly—if they don't have trouble, they ought to have it.

PLASTIC SURGERY OF THE FACE

TS RECENT DEVELOPMENT AND ITS RELATION TO CIVILIAN PRACTICE *

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As is well known plastic surgery about the face, especially rhinoplasty,[1] has been practiced for hundreds of years. It is my intention in this paper, not to discuss any given operation at length, but to bring to your notice the advancement of this branch of surgery within the last few years, and to suggest that it be more often employed in civilian practice than has been the custom heretofore.

The disabilities under consideration may be classified, first, as physical and, second, as mental; the first are actually functional; the disability in the second type of cases is the result of the person's mental attitude toward his disfigurement, and often restricts the activities of an individual sufficiently to reduce his worth to the community to a serious degree. We may consider these cases together; we have therefore for consideration such disabilities as are caused by tumors about the face, the removal of which entails much loss of tissue; deformities caused by syphilis; disfiguring scars which usually, by contraction, interfere with proper function of the eyelids, lips, alae nasi, etc., and the loss of eyebrows or part of the nose or ear or of the mucosa and soft parts of the eye-socket, with consequent inability to wear an artificial eye, or of the buccal mucosa, with adhesions and inability to open the mouth properly, or to wear a plate if needed.

It was my fortune, while in service, to be detailed to the Queen's Hospital for Facial Injuries at Sidcup, England, where this branch of surgery has been very highly developed and is practiced with, I think, unusual success. I have detailed this work with which I am familiar in the British camps; but America is by no means behind in it, as witnessed by the splendid work of Ferris Smith, Blair, Beck, Coughlin, Ingersoll, Arrowsmith, Carter and many others in this country.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Keegan, D. F.: Rhinoplastic Operations, London, Balliere, Tindall & Cox, 1900.

This success depends on many factors, prominent among which are abundant material of which the surgeon is in actual control until the work is finished, complete staff and equipment, and close collaboration between the surgical and dental and other departments. At Sidcup I learned that it is possible to maneuver skin, fat, muscle, cartilage and bone into new locations at will, with assurance of success in the great majority of instances. It is often necessary to do this work in stages. Surgical training of the most comprehensive kind is required; also are needed imagination and tenacity of purpose, with ability to draw, pattern and mold, and often much courage to carry out a proposed plan of operation. Complete records, such as history, physicial examination, photographs and plaster casts, before the operative procedure and before each succeeding operation, and at all times the strictest attention to details, are essential.

In supplying tissue to remedy a defect it is of primary importance that a defect be not caused in the region from which the tissue is taken, and that proper environment be afforded the graft while it is becoming established in its new position.

In flap grafting, the method of making flaps known as the tubed-pedicle flap [2] overcomes many of the difficulties formerly encountered, such as interference with blood supply and infection, with loss of tissue. It also renders it easier to shift flaps without disfigurement. In this method two incisions, about 3 inches apart, are made; the intervening skin is dissected up and inverted; the edges are stitched together and allowed to heal, thus forming a tube; the denuded area is covered by approximation beneath the tube, after any necessary undercutting has been done. The ends are left undisturbed; the proximal one is located so as to contain the most abundant blood supply available, e. g., the superficial temporal artery, and to allow the distal one to reach to its proposed site. If branches leading off from the blood supply are blocked, this of course increases the volume of blood passing through the flap. After ten to fourteen days the circulation through the tube and flap will have been well established. Then the distal end, holding the flap, cut to a pattern made of tinfoil or other suitable material (in exact size and shape of the area to be covered) is dissected up. Bleeding should be controlled. The flap is now shifted to the desired location.

Close coaptation of the entire surface and edges must be had in order to prevent separation by clot and infection and loss of tissue; the edges are best approximated by horsehair stitches placed at close intervals and left from four to eight days. As stitches are placed, it is occasionally found necessary either to loosen one or place it in another position, as is indicated by blanching of the skin. Surface approximation with this kind of flap usually is good, on account of the fact that the area covered generally is more or less convex.

When circulation is well established between the grafted skin and its new lodging place, the pedicle is either utilized to fill in further defect by lifting the former proximal end and turning it around, or else it is severed and returned to its former position.

When the tubed-pedicle is utilized as a flap or returned, an incision is made along the line of union of the free edge, and the tube is flattened out. In order to prevent contraction of the flap where a covering has been made for a cavity such as the nose, it is necessary that lining be afforded. This is done either by reflecting skin edges or by Thiersch grafts. Careful massage and local application of heat sometimes is indicated for a few hours after operation. Needling also is at times helpful in relieving venous congestion.

It is sometimes more advantageous to use a free graft of whole skin, known as the "Wolff graft." Here the graft is cut by pattern to fit, and is sewed carefully into place, covered by tinfoil, and held in apposition for a few hours by a cast of dental molding-compound made immediately beforehand. This method frequently is used in covering an area on the forehead where a large flap has been turned down, and closure by approximation alone is not feasible. It is also of use in covering small isolated areas in places, such as the tip of the nose.

In supplying epithelium to cavities such, for example, as the mouth, the eye socket, eyelids, or the interior of the nose, the Esser [3] operation, modified and much improved by Gillies, Waldron and Pickerell, is the operation of choice. The area to be covered is freshened by removal of scar, which usually is present, and by undercutting sufficient to allow the parts to assume the desired position; an exact cast of the raw area is made and allowed to cool in position; it is then covered by Thiersch grafts, the outer surfaces next to the cast, and the cast thus covered is reinserted and held in position from five to eight days. Then it can be removed by dividing the stitches which support it, when it will often "pop out," leaving a perfectly lined cavity. In order to prevent further contraction of the cavity, it is advisable that a cast of hard rubber be worn for a few weeks. This is, of course, to be removed frequently for cleansing, in mouth cases.

In some instances it is quite difficult to hold these casts in the desired position about the mouth and nose. A well fitting and carefully designed dental appliance cemented to the upper teeth and having an adjustable arm, which is flexible, over which the cast is made, will often overcome this difficulty. These must be fully tried out before the operation. Free suppuration occurs with these grafts, but they flourish in the presence of pus, and practically always "take."

In replacing eyebrows, care must be taken not to injure the hair follicles. They are best taken from the mastoid, and usually show growth in eight to twelve weeks.

Frequently it is necessary to replace bone as, for example, in the nose, forehead, cheeks or jaw.

Methods of bone-grafting will not be discussed in this paper further than to say that in this type of cases the advance has been great, particularly in jaw injuries. The osteoperiosteal graft is of great importance, and probably is available in more instances than any other, particularly when there is great loss of tissue and difficulty in finding anchorage. The crest of the ilium is particularly serviceable in ununited fractures of the jaw where there is not great loss of tissue, and where there are good edges to unite with.

Cartilage implantation is of great help where loss of bony support has occurred, as in the nose or in the skull, with only soft parts left to cover the dura; or in loss of the malar eminence or margin of the orbit or a part of the auricular cartilage. These can be done almost at will.

2. Devised by Major H. D. Gillies, R. A. M. C. (J. Nat. Dental A., January, 1920).

3. Esser, J. F.: Ann. Surg. 65: 297 (March) 1917.

Rib cartilage is shaped as desired and inserted either at once or buried in the chest wall, and later on taken out and shaped and put into the desired position.

Fat and muscle grafts also are frequently made use of in filling out depressions.

The end-results in these cases are so uniformly successful and so very gratifying to both patient and surgeon that I wish to urge the more frequent employment of this line of treatment in these cases.

ABSTRACT OF DISCUSSION

Dr. William T. Coughlin, St. Louis: When I operate on syphilitics I fear lest things will go wrong, and the accidents are suppuration and sloughing. I insist on a course of antisyphilitic treatment before any plastic surgery is attempted on these persons. The "mental disability" is worth consideration. It is most marked in civilian patients. Because there are few in the hospital, they do not see others of like condition. I was astonished in war work to see the change in the patients after admission. Brought in much depressed, as though it was all over with them, when admitted to the ward with the other patients their attitude changed and they became cheerful. Control of a case throughout by one surgeon is important and desirable. To attempt to do this without the assistance of our dental colleagues is absurd, but the surgeon must direct.

The "special" surgeon should have a wide surgical training, and I am glad of the effort being made to have otorhinolaryngology include the head and neck. I find it difficult to have patients cooperate. They do not want so many operations. They want to get through quickly, and one cannot get the best results with that kind of work. The "tubed pedicle" is one of the best of flaps. Accumulation of blood under the Wolf graft works against its success. The Esser inlay is one of the best things the plastic surgeon has gotten out of the war.

Dr. George M. Dorrance, Philadelphia: At the beginning of the war men did not read as they should; if they had, they would have known more about transplanting and grafting and would have avoided many mistakes. There is practically nothing new in implant surgery. In the Crimean War and in the Franco-Prussian War, excellent work was done. I do not like the osteoperiosteal graft. The best graft of all is the one with a pedicle attached to the subcutaneous or muscular tissues. The idea of using cartilage for deformity of the forehead is not correct. Fraser used the outer table of the skull and obtained very good results.

Dr. Austin A. Hayden, Chicago: One of the most important steps in the preparation of these patients is to procure very carefully made pictures of the condition present before the operation. This can best be done by the man who is going to operate, because photographers invariably try to hide the deformity, which defeats the object of the picture. Asepsis is very important. Iodin should be used freely inside of the nose, and over a considerable area of the face, before an intranasal operation is attempted. I have done an intranasal operation. It is much harder to get the patient to consent to an operation in which an external incision is to be made.

Dr. Ferris Smith, Grand Rapids, Mich.: I was greatly surprised to hear Dr. Dorrance say that there is nothing new about rhinoplasty. He has not read much or he would not make that statement. The rhinoplasty that was done a thousand years ago was the Indian type of operation, which was performed to cover up the defect, but there was no lining and no support. Then they tried a covering with support but no lining, and finally Nélaton combined the three essentials. The technic of Gilles, which grew out of his service in the war, certainly is the only method which makes a certain rhinoplasty possible.

Dr. Millard F. Arbuckle, East St. Louis, Ill.: In selecting the time for operation in cases with suppuration, it is important to remember that considerable time is required for the scar tissue to become sterile.

THE CATALASE CONTENT OF THE BLOOD IN DIFFERENT TYPES OF ANEMIA*

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AND
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In spite of the contradictory state of our knowledge of the catalase content of the blood under various clinical and experimental conditions, and the wide variations that have been found in different individuals of the same species,[1] we were led to make a comparative study of the catalase content of normal and anemic bloods by the statement of Van Thienen[2] that in pernicious anemia the catalase index of the blood was extraordinarily high. Although Stehle's experiments demonstrate that the catalase content of the blood fluctuates under given conditions parallel with the hemoglobin content, nevertheless an index obtained by dividing the catalase content by the hemoglobin or red blood cell count would still be significant if it constantly showed changes in the same direction in this or that disease. We, therefore, have endeavored to control van Thienen's observations, by comparing such an index of the blood of pernicious anemia cases with that of other anemias, and of nonanemic individuals. A further control of the enumeration of the red blood cells in the actual sample from oxalated blood was also made in most cases. As the index thus obtained was in the main proportional to that furnished by the clinical erythrocyte count, and the variation never sufficient to affect the conclusion drawn, these figures have not been included in this report.

The method of estimating the amount of catalase was exactly similar to that described by Stehle. The samples of blood were necessarily collected at a distance from the laboratory, so that a delay up to an hour was unavoidable; but control tests proved that standing did not cause an appreciable change in the catalase content. The slight increase that was sometimes found after standing several hours we considered to be probably due to the greater concentration of the sample. The blood was obtained as far as possible at the same time of day, a given number of drops (twenty) from the ear or vein mixed with two drops of 10 per cent. potassium oxalate, and well shaken before samples were taken. We could detect no noteworthy differences in venous or capillary blood. Two samples were taken of each blood and readings of the amount of oxygen liberated made after five, ten and fifteen minutes. Of these readings, which were closely proportional, only the fifteen minute reading has been given, as coming nearest to the correct estimation. This we have found to represent about 75 per cent. of the total oxygen liberated, and minimizes errors introduced by changes in temperature, acidity, etc. In a few cases in which an obvious fault in technic spoiled one of the samples, a single reading was taken. In the others, as the variation averaged less than 5 per cent., the average of the two readings is given.

* From the John Herr Musser Department of Research Medicine, University of Pennsylvania School of Medicine.

1. Burge, W. E., and collaborators: Am. J. Physiol. **50**: 165 (Oct.) 1919, and numerous papers in the same journal since 1916. Stehle, R. L.: J. Biol. Chem. **39**: 403 (Sept.) 1919. Winternitz, M. C.; Henry, G. R., and McPhedran, F.: The Determination of the Catalytic Activity of the Blood as a Clinical Diagnostic Method, Arch. Int. Med. **7**: 624 (May) 1911.

2. Van Thienen, G. J.: Nederlandsch Tijdschr. v. Geneesk. **1**: 2006 (June 7) 1919.

After most of this work was done there appeared Bodansky's [3] demonstration that the volume of oxygen liberated depends on the hydrogen ion concentration of the peroxid, which may vary up to 35 per cent. in different samples of the same make. We were fortunate in having used only three different samples of peroxid, all of the same make, and made several estimations on each type of case with the same sample. Our conclusions, therefore, are not affected by the lack of control of this factor, although we have several times confirmed his observation that more oxygen is liberated from peroxid of p_H 7 than of lower hydrogen ion concentration. The catalase index was obtained by dividing the number of cubic centimeters of oxygen liberated at the end of fifteen minutes by the red cell count expressed in millions. Records of temperature and barometric pressure were kept; but the correction involved (which was always found to vary by less than 4 per cent.) was so small, compared to the individual variations, that the original readings have been retained.

RELATION OF CATALASE CONTENT OF BLOOD TO RED BLOOD CELL COUNT

Type	Cubic Centimeters of Oxygen Liberated by 0.1 C.c. of Blood in 15 Minutes	Red Blood Cell Count per Cubic Millimeter	Catalase Index
Pernicious Anemia:			
Case 1	37.0	920,000	40
Case 2	80.0	2,320,000	34
Case 3	66.5	1,660,000	40
Case 4	31.5	1,020,000	31
Case 5	15.0	930,000	16
Case 6	45.5	1,910,000	24
Case 7	77.0	2,210,000	29
Case 8	29.0	1,560,000	19
Case 9	28.0	1,730,000	16
Average	45.3	1,483,000	28.6
Other Anemias:			
Secondary	58.5	3,700,000	16
Secondary	150.0	2,830,000	53
Secondary	105.0	2,680,000	39
Secondary	77.0	3,490,000	22
Secondary	142.0	4,010,000	35
Secondary	111.0	3,660,000	30
Secondary	53.0	2,970,000	18
Acute hemolytic anemia	52.0	2,410,000	22
Congenital hemolytic jaundice	38.0	2,590,000	15
Congenital hemolytic jaundice after splenectomy	75.5	4,400,000	17
Banti's disease	155.0	3,800,000	41
Average	92.5	3,322,000	28
Nonanemic:			
Aortitis	168.0	5,130,000	32
Premature menopause	179.0	5,160,000	36
Suspected syphilis	156.0	5,000,000	31
Trauma of lip	179.0	5,470,000	36
Headache	150.0	4,650,000	30
Normal	147.0	4,380,000	33
Normal	143.0	5,540,000	26
Normal	145.0	4,530,000	32
Normal	215.0	5,250,000	43
Average	164.1	5,013,000	32.7

Two items are at once apparent in the accompanying table: first, that the anemic blood liberated much less oxygen than the normal, and second, that the wide variations found by other workers were also present in our series. Both the actual amount of oxygen liberated and the resulting indexes varied less in the nonanemic than in the anemic individuals; but the averages obtained from all three groups were surprisingly close.

It is stated by Wells [4] that removal of various organs—among which is included the spleen—temporarily diminishes the catalase contents of the blood. In a few tests on splenectomized monkeys we have found this to be the case, but are inclined to attribute it to the transient anemia that follows splenectomy. In a case of hemolytic jaundice, on the other hand, when the blood picture improved greatly after splenectomy, the catalase content also increased, so that there was very little resultant change in the catalase index. In dogs, the catalase content of the blood is relatively low; but after they had been made plethoric by repeated transfusions, it was considerably increased.

3. Bodansky, M.: A Note on the Determination of Catalase in Blood, J. Biol. Chem. **40**: 127 (Nov.) 1919.
4. Wells, H. G.: Chemical Pathology, Ed. 2, p. 69.

CONCLUSIONS

Under the conditions observed by us, the catalase content of the blood varies according to the concentration of red blood cells and this ratio is not materially affected by splenectomy or by the various types of anemia studied.

GAUCHER'S DISEASE

REPORT OF A CASE

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According to Mandlebaum, up to 1916 there were nineteen instances of Gaucher's disease in the literature in which the diagnosis had been determined by histologic examination. Since then, cases established on a similar basis have been reported by Evans, Reuben, Mandlebaum (two) and Carr and Moorhead. This makes a total of twenty-four authentic cases,[1] to which the present report adds another.

REPORT OF CASE

History.—J. B., aged 50, a Polish Jew, a shoemaker, lived alone, and had no relations or friends in this country, and very little could be learned of his previous history. From the reports of the neighbors, though somewhat "queer," he was apparently in good health and attended to his business regularly. The day of his death he acted quite eccentrically, and without reason struck at one of his customers and chased her from the shop. So violent were his actions that a policeman, hurriedly called, shot twice at the man, each shot taking effect. The patient was taken by the police patrol to the Hahnemann Hospital, where an examination revealed the two bullet wounds. One of these entered about the seventh rib on the right side, causing a hematoma, but not penetrating farther, the bullet being plainly palpable. The other bullet entered in the left iliac region, but no exit was found. On admission, the patient was conscious and able to tell his name and age, and answer other questions. He rapidly lapsed into unconsciousness, however, and died in an hour and a half.

Necropsy.—This was performed twenty-five hours after death by the coroner's physician, Dr. W. S. Wadsworth, whose

1. These are as follows:
Gaucher: Thèse de Paris, 1882.
Collier: Tr. Path. Soc., London **46**: 148, 1895.
Picou and Raymond: Bull. Soc. anat. de Paris **70**: 531, 1895; Archiv. de méd. expér. et d'anat. path **8**: 168, 1896.
Bovaird: Am. J. M. Sc. **120**: 377, 1900.
Brill, Mandlebaum and Libman: Proc. New York Path. Soc. **4**: 143 1904; Am. J. M. Sc. **129**: 491, 1905.
Schlagenhaufer: Verhandl. d. deutsch. Gesellsch. **10**: 77, 1907; Virchows Arch. f. path. Anat. **187**: 125, 1907.
Von Herczel: Wien. klin. Wchnschr. **20**: 123, 1907.
Marchand: München. med. Wchnschr. **54**: 1102, 1907.
Brill, Mandlebaum and Libman: Am. Jour. M. Sc. **137**: 849, 1909.
De Jong and van Heukelom: Beitr. z. path. Anat. u. z. allg. Path. **48**: 598, 1910.
Mandlebaum: J. Exper. Med. **16**: 797, 1912.
Wilson: Surg., Gynec. & Obst. **16**: 240, 1913.
Downes: Med. Rec. **83**: 697, 1913.
Babes, Aurel and Babes: Compt. rend. Soc. de Biol., 1913, No. 36, p. 575.
Sapegno: Arch. science méd. **37**: 323, 1913.
Stevenson: Brit. M. J. **2**: 847, 1913.
Niemann: Jahrb. f. Kinderh. **79**: 1, 1914.
Erdman and Moorhead: Am. J. M. Sc. **147**: 313, 1914.
Herrman, Roth and Bernstein: Arch. Pediat. **31**: 340, 1914.
Evans: Proc. New York Path. Soc. **16**: 114, 1916.
Reuben, M. S.: New York M. J. **107**: 118 (Jan. 19) 1918.
Mandlebaum, F. S.: Am. J. M. Sc. **157**: 366 (March) 1919 (two cases).
Carr, J. G., and Moorhead, L. D.: Gaucher Type of Splenomegaly, J. A. M. A. **72**: 19 (Jan. 4) 1919.

notes state that the subject was of medium size and the body was in good condition, with fair muscular development and a moderate amount of fat. The necropsy was performed primarily to ascertain the fatal effect of the bullets, and hence the notes on the organs are only casual. The stomach and intestine were penetrated, and the lower edge of the spleen was cut by the bullet. The liver exhibited what looked like a moderate chronic hepatitis. The retroperitoneal glands were moderately enlarged. The condition of the spleen was so peculiar that Dr. Wadsworth kindly offered it to me for further gross and microscopic examination. Death was unquestionably to be attributed to the bullet wound.

The spleen was brought at once to the laboratory and found to weigh 825 gm. and measure 23 by 12.7 by 5 cm. The organ in general was quite soft, in some spots almost mushy; but scattered all through it were firm nodules more apparent to the palpating finger than to the eye. The feel of these nodules might be compared to that of the numerous secondary tumors felt in malignant growth of the lung. On section, the firmer areas were not plainly discernible. The general color of the sectioned spleen was that of a normal organ, but close inspection revealed that the nodules were of a deeper brownish red than the surrounding parts. The size of these firmer masses varied from 0.5 to 1.5 cm. in diameter.

Microscopic examination disclosed the characteristic picture of Gaucher's disease. Rather marked thickening of the arteries and an abundance of pigment were also noted. The nodular portions of the spleen correspond to those areas in which the dilated sinuses were prominent. To eliminate any doubt as to the authenticity of the case, sections were submitted to Dr. F. S. Mandlebaum for an opinion. His observations are as follows:

"The sections of spleen from your case show the typical lesion of Gaucher's disease. The dilated sinuses, the arrangement of the large cells with the peculiar type of cytoplasm and small nuclei, often multiple, the pigment—all these are most characteristic features. It might appear at a glance that those portions of the spleen in which the sinuses are not very prominent were devoid of large cells, but with the high power the cells are readily seem among the pulp cells. The follicles are rather well preserved, but throughout the section the arteries show marked changes. I assume from this that your case is that of an adult, also because the pigment is quite prominent. In young individuals the pigment as a rule is scant or absent in the spleen."

COMMENT

Clinically, the meager knowledge of this case permits but few comments. In the matter of age, this patient of 50 is the oldest case of Gaucher's on record. Carr and Moorhead's [1] patient was 46 and Marchand's,[1] the next in order, was 44 years of age. As the disease is supposed to begin in infancy or early life and last many years, it might be expected that the older the patient, the greater would be the size of the spleen. This was apparently realized in Brill, Mandlebaum and Libman's [1] case, the patient dying at 42, the disease lasting twenty-one years and the spleen weighing 8,100 gm. Carr and Moorhead's [1] case also had a duration of thirty-seven years, and the spleen weighed 4,990 gm. But Marchand's [1] patient, in whom the disease was supposed to have a duration of twenty years, had a spleen weighing only 2,720 gm. And Schlagenhaufer's case had a record of thirty-eight years' duration, the patient dying at 43 with tuberculosis, and the spleen weighing 3,510 gm. In the present case, the spleen, as far as can be ascertained, is the smallest of the Gaucher type occurring in adults, indicating that the disease began late in life or was extremely slow in development.

The familial aspect of this disease has rightly been emphasized, but in none of the original reports available or in any of the summaries from the literature has there been found mention of racial predilection. Yet, correctly or incorrectly, the perusal of case reports has given the collective impression that the disease is more common in Jews. In the case herewith cited, the patient was a Jew. This comment is therefore intended to be interrogative in character.

The histology of Gaucher's disease has been described with great detail and exactness by Marchand,[1] Schlagenhaufer,[1] Risel,[2] Mandlebaum [1] and Mandlebaum and Downey.[3] To the usual microscopic studies have lately been added observations on the microchemical reactions for lipoids. Anitschkow [4] demonstrated large cells containing lipoids in animals experimentally fed on fats and lipoids; and in these cases the lesions resembled those of Gaucher's disease so closely that Aschoff [5] referred to the condition as "pseudo-Gaucher." Schultze,[6] Lutz,[7] and Williams and Dresbach [8] also reported cases of diabetes with lipoidemia featured by large cells containing lipoids. The resemblance to Gaucher's disease in these cases was noted. In the two cases of Knox, Wahl and Schmeisser,[9] reported as examples of Gaucher's disease, the authors demonstrated a lipoid substance in the large cells of the first case. Mandlebaum and Downey,[10] in a criticism of Knox, Wahl and Schmeisser's paper, point out the histologic identity of these cases with those of Anitschkow, Schultze and Lutz, and the further resemblance in lipoid content. They conclude that the foregoing cases are not true examples of Gaucher's disease, and believe that in genuine Gaucher's disease fat or lipoid bodies cannot be demonstrated in the large cells by microchemical means.

In the present case, sections of the formaldehyd-fixed spleen were stained with osmic acid, scarlet R, sudan III, Nile blue and by Ciaccio's method. With osmic acid, Nile blue and Ciaccio's method, results were negative. Scarlet R and sudan III were used in the simple alcoholic solution, in Herxheimer's alkaline solution and also in his solution in alcohol and acetone. The results with simple alcoholic solutions were negative, and those with the alkaline solutions were negative or unsatisfactory. In employing scarlet R and sudan III dissolved in alcohol and acetone, the staining sections were exposed in open dishes, contrary to the usual directions, and the fluid allowed to evaporate more or less. In this way, it was noted that the large cells in the sinuses, as well as those in the pulp, took on a decided pink or red. This color was never the deep red assumed by control fat sections, but in the spleen the color of the large cells contrasted distinctly with the pallor of the follicles and other cellular portions of the section. They were easily the deepest stained parts of the specimen. This was not due to precipitate, for the cells assumed a diffuse pink or red color and not a granular or dotted appearance. The significance of this reaction is not clear, but attention is called to Bullard's [11] remarks:

Bell [12] believed that neutral fat is readily stained with simple alcoholic solutions of scharlach R, but many faintly refractive "liposomes," which consist wholly or in part of lipoids, are stained only by Herxheimer's method. Later

2. Risel: Beitr. z. path. Anat. u. z. allg. Path. **46**: 241, 1909.
3. Mandlebaum and Downey: Folia haematol., 1916, **20**, Archiv. 139.
4. Anitschkow: Deutsch. med. Wchnschr. **39**: 741, 1913.
5. Aschoff, quoted by Mandlebaum and Downey (Footnote 10).
6. Schultze: Verhandl. d. deutsch. path. Gesellsch. **15**: 47, 1912.
7. Lutz: Beitr. z. path. Anat. u. z. allg. Path. **58**: 273, 1914.
8. Williams, J. R., and Dresbach, M.: Am. J. M. Sc. **153**: 65 (Jan.) 1917.
9. Knox, J. H. M., Jr.; Wahl, H. R., and Schmeisser, H. C.: Bull. Johns Hopkins Hosp. **27**: 1 (Jan.) 1916.
10. Mandlebaum, F. S., and Downey, H.: Bull. Johns Hopkins Hosp. **27**: 109 (April) 1916.
11. Bullard: The Microscopical Demonstration of Fats in Tissue Sections, J. Med. Res. **27**: 55, 1912.
12. Bell: Anat. Rec. **4**: 199, 1910.

Bell [13] states that there is no good evidence that Herxheimer's stain will show fats which are qualitatively different from those brought out by the simple alcoholic stains. He, however, thinks that his faintly refractive liposomes contain some substance other than fat, possibly an albuminolipoid, and are usually left unstained by simple alcoholic solutions of scharlach R, while they may be stained with more or less intensity by Herxheimer's method.

The Herxheimer method referred to by Bell is the alkaline alcoholic solution. Mandlebaum [14] notes that while the peculiar substance in the cells of Gaucher's disease has never reacted to any microchemical method for lipoids, it is in all probability of complex protein nature in combination with lipoids.

SUMMARY

The case of Gaucher's disease herewith reported is the twenty-fifth on record in which the diagnosis has been established by histologic examination. The patient was 50 years of age, the oldest recorded. Some positive staining reactions were obtained with concentrated Herxheimer's solutions of scarlet R and sudan III. The significance of these results, however, is not clear.

1327 Spruce Street.

Clinical Notes, Suggestions, and New Instruments

ANESTHETIC FRAME

MYER N. MOSKOVICH, M.D., ST. PAUL

The drop method of administering an anesthetic is superior to any other at present in use. After the surgical point of anesthesia has been reached, only a small amount of the anesthetic is required to keep the patient under, and it is equal to that expired by the patient plus that given off by his tissues. The variation in different individuals is within the range of difference between a slow and a fast continuous drop of the anesthetic. It is difficult, however, to give such an anesthetic without interruption by the essential duties to watch the eyes, properly support the jaws, take and record pulse and respirations, and do any number of other things arising during the course of its administration. It was the desire to have an even and uninterrupted anesthetic given which prompted me to devise the apparatus here described.

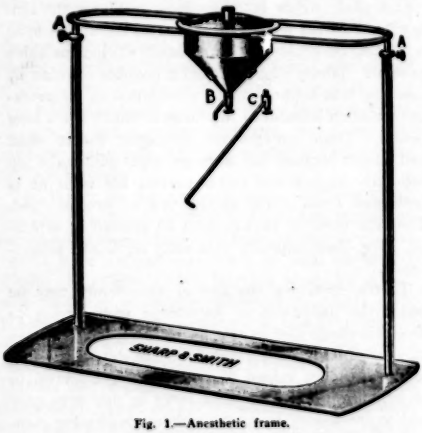

Fig. 1.—Anesthetic frame.

Figure 1 represents an anesthetic frame. It is 15 inches in height, when closed, 18 inches in width, and weighs 5½ pounds. The screws at *A* permit the height to be increased.

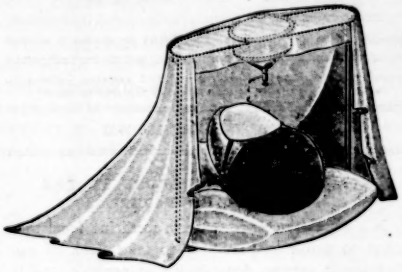

Fig. 2.—Apparatus in use.

The can holds 12 ounces of the anesthetic, and may be rotated about or moved from side to side. The short nozzle, *B*, is used in operations in which a sterile anesthetic is not required, while the longer nozzle, *C*, is substituted in all operations about the head, neck and shoulders, thus administering the anesthetic at a point 8 inches from the patient's head, at which distance the operator works without being handicapped by the presence of the frame. The small thumb screw at the lowermost part of each nozzle is used to adjust the flow from a slow to a fast drop or a continuous stream.

Figure 2 crudely shows the apparatus in use and the manner in which the sheet from the patient's body is drawn over the frame to act as a means of separation between the operator's field and that of the anesthetist. The patient's head rests on a pillow which fits between the rods of the frame and helps to keep the apparatus from sliding when the Trendelenburg position is used.

The patient is first anesthetized in the usual manner. When the third stage of anesthesia has been reached, the frame is placed in position and the thumb screw regulated to permit the desired flow. An Esmarch mask is used to receive the anesthetic, and the gauze or flannel which envelops it is capable of diffusing the anesthetic as fast as it drops, a point which I proved to my own satisfaction and also to the satisfaction of those who have watched the frame in use.

ADVANTAGES

1. The apparatus aids in the administration of a uniform, drop method, anesthetic without interruption.
2. It permits the use of one or both hands when required.
3. It acts as a shield in separating the operator from the anesthetist.
4. It may be used to replace the so-called sterile anesthetic, which in reality does not exist.
5. Ether or chloroform may be used.
6. The frame is of convenient size, simple in construction, uncomplicated in its manipulation, attractive in appearance, and inexpensive.

641 Grand Avenue.

Sodium Fluorid as Insecticide.—The best insecticide against the roaches is sodium fluorid powder mixed half and half with flour or starch and sprinkled lightly about their haunts. If the powder is used pure it is not very efficacious as the roaches will not always eat it, particularly if it is heavily sprinkled, as its poisonous effect on the insect is produced by its being ingested.—*U. S. Nav. M. Bull.*, January, 1920.

13. Bell: Internat. Monatschr. f. Anat. u. Physiol. **28**: 297, 1911.
14. Mandlebaum, F. S.: Am. J. M. Sc. **157**: 366 (March) 1919.

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SATURDAY, JULY 10, 1920

LIMITATIONS OF KNOWLEDGE IN THE MANAGEMENT OF NEPHRITIS

It is a wholesome experience in medicine from time to time to pause long enough to take stock of our knowledge in various departments of practice, and to ascertain whether we are walking in the light of sound information or merely groping aimlessly in the darkness of ignorance. Now and then some thoughtful clinician, who is unwilling to apply drugs regarding the action of which he has only traditional or conjectural evidence to guide him, is met with the charge of therapeutic nihilism. In this day and generation, however, it is high time to understand that skepticism is not necessarily identical with either ignorance or pessimism. Scientific education has taught medical men, like others, to demand the truth above all else. Guesswork can never be a real panacea. For this reason we welcome the frankly critical review by Christian [1] which was recently published in The Journal on the subject of treatment in chronic nephritis.

The subject is one of such widespread interest and significance in the daily life of every physician that the gaps in our knowledge deserve to be made clear and prominent. Without essaying to review the details of Christian's contentions, we may point out in his words that, except for the removal of recognized foci of infection and as prompt and efficient treatment as is possible of all acute infections, we at present can do virtually nothing for the prevention of nephritis. Preventive treatment in a practical sense is almost nil for chronic nephritis, and will remain so until we learn more of the etiology and particularly of the factors that influence the progressive development of renal lesions. The use of new words, such as nephropathy or nephrosis, does not advance our knowledge beyond addition to the vocabulary.

It is currently believed that in chronic nephritis the kidney is more or less incompetent and must therefore be spared from "overwork." Since water, salts and nitrogenous catabolites represent the compounds which the kidneys help to eliminate, effort is often made to diminish the occasion for getting rid of these products. The intake of these, or of their precursors in the case of nitrogenous waste products, is restricted. Although it is realized that undue reduction in the water output may damage the renal cells owing to the excessive concentration of the resulting urine, few efforts have been made to ascertain what constitutes an optimal or desirable water intake in nephritis. Practice today proceeds in individual cases on a basis of hypothesis rather than fact; yet, as Christian has remarked, until appropriate studies have been made, much of the value of a prescribed water intake in influencing the course of nephritis must remain guesswork. The "flushing out" of the "system" or the kidneys with water, whatever this may mean, represents the converse unfounded therapeutic project that one still hears spoken of at the bedside.

"Sparing" the kidneys by restricting the protein intake likewise is not without possibilities of detriment if it is continued to an extreme degree or over long periods. The advantages of reducing kidney function by decreasing the excretory work to be done has been heralded by the advocates of the low protein diet. There is, however, no proof that a kidney necessarily suffers by the work to which it is adapted any more than does a muscle. Functional performance tends in many instances to improve rather than deteriorate the structures concerned. By use a muscle grows stronger, more efficient, and less easily fatigued. Inaction is detrimental. What is "physiologic rest" for the kidney? And what will be the effect, on the organism as a whole, of prolonged deprivation of indispensable protein? Janney [2] has sounded a possible warning by asserting that nephritics may even attain an unfavorable condition because of low protein intake for a long period. Those patients are frequently rather weak and obese because the average man will make up promptly in fats and carbohydrates for what he is prevented from taking in the way of protein food. The occurrence of obesity must be avoided in nephritis. The obese nephritic is usually weak and neurasthenic.

To the foregoing features of uncertainty may be added the limitations of knowledge with respect to nephritic edema and its management. It is not always easy to dissociate the renal from the extrarenal factors. The once valued diuretic drugs are known to be actually harmful in some cases in that they only add to the kidney irritation without facilitating elimination. Debilitating sweats and catharsis help little at best. And when we approach the subject of the hypothetic toxins, the vagueness of the literature is a monument to the substitution of fancy for fact. We need more facts.

1. Christian, H. A.: Deficiencies in Our Method for the Treatment of Chronic Nephritis, J. A. M. A. 74: 1615 (June 12) 1920.

2. Janney, N. W., in discussion on article by Christian, J. A. M. A. 74: 1618 (June 12) 1920.

VITAL STAINING

The current scientific literature includes numerous references to phenomena that are designated as "vital staining"—an expression which we believe to have been promoted, if not actually introduced by Ehrlich. In its original implication it was supposed to apply to certain living cells that were distinguishable from others by the capacity of being stained with special dyes introduced into the body. Methylene blue was among the first of such compounds to be studied. Numerous other "vital stains" have since been investigated. It was Ehrlich's belief that the localization of these dyes in definite structures is due to chemical combinations within the tissues. The capacity of a cell to undergo vital staining was thus interpreted as a reaction between special groups in the protoplasm and the selected dye. The hypothesis was formulated to fit Ehrlich's "side chain theory," which has played a prominent part in the development of the science of immunology.

A review of the history of vital staining shows that the phenomenon has played a part in the explanations of the permeability of cells in general. Certain uninjured cells are readily penetrated and "stained" by such dyes as neutral red, methylene blue, toluidin blue, thionin and saffranin. Other dyes like nigrosin and anilin blue tested under comparable conditions do not penetrate the cells. Wells [1] has pointed out that Overton tested the solubility of dyes which are not vital stains and found them insoluble in oils, fats and fatty acids; but the dyes staining living cells were readily soluble in lecithin, cholesterol, "protagon" and cerebrin, the so-called cell lipoids. Furthermore, if crumbs of lecithin, "protagon" or cerebrin were placed in very dilute watery solutions of these dyes, they were found to absorb from the water the vital stains, but not the others, which indicates that stains that penetrate living cells are more soluble in lipoids than they are in water.

The theory of the essential lipoid solubility of all dyes that penetrate cells must be abandoned because of numerous contradictions with experimental facts. As the result of an elaborate study of vital stains and staining, Schulemann [2] has found it necessary to discard the other previously mentioned hypothesis also. According to him, the occurrence or nonoccurrence of vital staining with any dyes depends essentially on the physicochemical properties of the latter. Those dyes that are not readily diffusible penetrate cells with slowness, and when once they find their way into these structures they disappear from them only slowly. Readily diffusible compounds, on the other hand, easily stain cells; and the dye disappears again with readiness. Vital staining thus becomes in the main a question of penetration by diffusion—not a problem of specific chemical affinity with some component of the protoplasm. The behavior of dyes in relation to cells is a result of the physicochemical properties of the substance investigated, rather than of their chemical structure. The deposition of dyes in granular form within tissues seems to depend on physicochemical conditions that induce flocculation.

The distribution and deposition of dyes as they are observed in so-called vital staining is of scientific interest because these phenomena, which can be followed by the colors that are involved, apparently duplicate the movements of many other noncolored substances, including products of metabolism, within the tissues. If it is true, as Schulemann asserts, that the vital stainings are the exhibitions of the expected distribution of chemical substances having appropriate diffusion and solubility characters, it may be assumed that nonvisible compounds like the amino-acids, carbohydrates and other normally occurring metabolic intermediary products of comparable diffusibility, etc., can find their way into the same structures by the same pathways from the blood. This is likewise true of the movements of drugs in the body. Suitable dyes may be expected to teach the paths, places and limits of penetration which may ultimately help to disclose where and how important biologic reactions take place. Vital staining has already been employed to distinguish normal from abnormal cells by their unlike permeability to the products selected to discover them. Perhaps the appropriate pathways of drugs will similarly be discovered.

1. Wells, H. G.: Chemical Pathology, Philadelphia, W. B. Saunders Company, 1918, p. 50.
2. Schulemann, W.: Die vitale Färbung mit sauren Farbstoffen in ihrer Bedeutung für Anatomie, Physiologie, Pathologie und Pharmakologie, Biochem. Ztschr. 80:1 (March) 1917.

INTERRELATIONS OF ATROPHY AND HYPERTROPHY IN THE LIVER

Under abnormal conditions, portions of the liver may be the seat of either atrophy or hypertrophy. An increase in the mass of one or more lobes has been observed to follow local disturbances that interfere with the portal supply to other parts of the same organ. This increment in hepatic parenchyma may be regarded as a compensatory hypertrophy, analogous to the overgrowth which other parenchymatous structures undergo when added burdens of functioning are thrown on them. The possibility of an atrophy in one lobe dependent essentially on a simultaneously developing hypertrophy elsewhere seems, on the other hand, not to have been appreciated in the study of the pathology of the liver. The prevailing view has been that severe atrophic liver changes do not occur after interference with branches of the portal circulation in man or the laboratory animals unless the blood pressure is abnormally low in the hepatic artery or high in the vena cava as the result of a disturbed systemic circulation. When atrophy does occur, it has been assumed to be due to some more severe deprivation of the tissue.

Rous and Larimore[1] have recently recorded the occurrence of atrophy in liver tissue conditional on compensatory changes in other parts of the organ. The occlusion of portal branches to a part of the liver of the rabbit leads to a progressive and ultimately complete atrophy of the parenchyma in the region deprived of portal blood, and to hypertrophy of the rest of the hepatic tissue which receives such blood in excess. Three fourths of the liver may thus be reduced to a fibrous tag within two months, while the remaining fourth attains the bulk of the entire original organ. The atrophy is simple, unaccompanied by obvious degenerative changes or by any connective tissue replacement. More important, it is conditional in nature, failing to progress when the bile duct from the proliferating tissue is ligated and its hypertrophy checked in this way.

There are numerous indications, as Rous and Larimore point out, that in man also an atrophy conditional on hypertrophy elsewhere may occur after interference with parts of the portal circulation. They suggest that the advanced local atrophy sometimes occurring in livers containing an echinococcus cyst, a gumma, slow growing tumor, or other limited process may well be the result of pressure on portal radicles. In such instances there is present elsewhere in the organ an abundance of parenchyma capable of compensatory proliferation. Likewise, it is suggested that local portal obstruction may be a prime cause for the extreme atrophy and hypertrophy sometimes seen in syphilitic livers, whereby great hepatic distortion results.

How is a destruction of liver tissue dependent on compensatory hypertrophy to be explained? Various possibilities have suggested themselves. When the portal blood stream is obstructed, the liver tissue is dependent on arterial blood alone. It is conceivable that the latter may be unsuitable for hepatic cells; but such unfitness would apply even when other liver cells were not undergoing hypertrophy on which the atrophy is evidently conditioned. Possibly the lack of the particular digestion products carried by the portal stream alters the functional state of the hampered cells. Perhaps, indeed, a special "food" is needed for the liver tissue which it cannot secure from the general circulation when once the unimpeded hepatic residue has hypertrophied to the point of being able to utilize all that is brought to it by the remaining portal stream. These are, indeed, mere physiologic speculations. If a "functional atrophy" of the liver truly exists, however, we must agree with Rous and Larimore that its completeness indicates that the liver has no essential activity, at least none on which its maintenance depends, which is not intimately associated with substances derived from the organs drained by the portal system. It is a significant experimental observation that the bile secreted from a liver mass far advanced in atrophy and competing with a large bulk of parenchyma receiving the entire portal stream is almost colorless and devoid of characteristic bile salts. Glycogen, on the other hand, may be present in the atrophic cells in approximately the same amount and distribution as in the hypertrophic liver tissue of the same animal. "Conditional atrophy" may not only explain such chemical anomalies; Rous and Larimore venture to believe that it may perhaps also be responsible for alterations in the shape of the normal liver that have been indefinitely attributed heretofore to pressure from the surrounding organs.

1. Rous, Peyton, and Larimore, Louise D.: Relation of the Portal Blood to Liver Maintenance, a Demonstration of Liver Atrophy Conditional on Compensation, J. Exper. Med. **31**: 609 (May) 1920.

THE MEASURE OF PHYSICAL FITNESS

If the attainment of what is sometimes termed "athletic condition" is a factor in physical fitness and human efficiency, it becomes important to learn the criteria. Relative freedom from fatigue, effective muscular training, good health and similar expressions indicative of preparedness for bodily activity offer at best a vague implication regarding the physiologic basis for competent performance by the individual. What is involved in physical fitness? How can it be attained and how is it affected by exercise or training? If these questions can be analyzed in a purely objective way free from the personal or individual bias of the examiner or the subject concerned, a distinct step in advance toward a real physiology of exercise will have been taken.

A recent writer[1] has concluded that the chief elements in athletic condition are a strong heart muscle, a highly efficient coronary circulation, and good peripheral vasomotor control. He hazards the further guess that there may be even deeper factors, such as a vigorous metabolism involving the ability to generate energy rapidly without undue accumulation of harmful end-products. Obviously, the possession of these faculties will enhance the ability to meet new muscular tasks with success and to adjust promptly to severe muscular effort. There have been numerous suggestions in the past for estimating these features of fitness. For example, it has been noted that the heart rate serves as an indication of condition, since it is relatively low in the active, well trained person, and that it is increased less on exertion in the athletic person and returns more promptly to its normal rate than it does in the case of the sedentary, inactive individual. A slow horizontal and a slow vertical postural pulse, with a small difference between the two, are also usually now regarded as signs of "excellent health." Changes in blood pressure have also been referred to as indicative of the same features.[2]

1. Manual of Medical Research Laboratory, War Department, Air Service, Division of Military Aeronautics, Washington, D. C., 1918, p. 85.
2. Crampton: Proc. Soc. Exper. Biol. & Med. **12**: 119, 1915. Sewall: Am. J. M. Sc. **158**: 786, 1919.

The question of physical condition has been especially important in the disposal of men in the service of the army. Reviewing the difficulties that beset the responsible officer, Schneider [3] has lately pointed out in THE JOURNAL that so far as the pulse rate criteria are concerned, in forming a judgment as to the physical condition of a man it is best to consider together the postural rate, the increase on standing and after exercise, and the time required for the rate to return to the normal after exercise. Those who are concerned in physical training as an aid to healthful living will be interested in Schneider's account of the scoring scheme introduced in the medical inspection of the air service to take cognizance of six factors that represent cardiovascular changes or conditions. In a mathematical way it recognizes, with a minimum of "personal bias," to quote Schneider, that fatigue or derangement may be evidenced in the high heart rate during reclining; during standing; in the number of beats the heart rate increases when the standing and reclining postures are compared; in the accleration of the pulse rate after exercise; in the time taken by the pulse to return to normal, and, lastly, in the rise or fall in the systolic blood pressure on standing. A low score not only helps to eliminate the less fit but also acts as a stimulus to the person who needs to exercise in such a way that "his heart will have to work harder, the coronary vessels deliver a full volume of blood, the vasomotors be practiced in their work, the respiration deepened, and metabolism kept going at an increased rate." [1] Apparently we now have a more satisfactory test of cardiovascular fitness.

Current Comment

GENERAL WILLIAM CRAWFORD GORGAS

A man sometimes becomes a tradition or a symbol. Before his death, Gen. William Crawford Gorgas had become a symbol of hygiene: an idol to whom all the nations of the world appealed when threatened by deadly plague or perilous infection. The tradition, in this case, was based on a record of successful accomplishments: yellow fever driven from Havana; Panama —the "White Man's Grave"—made one of the most healthful places in the world; investigations on pneumonia in Africa, and an American army under his protection, with one of the lowest mortality records heretofore achieved. It is not necessary to repeat here how these sanitary triumphs were developed. Much has been written on the subject, and no doubt the future will produce competent histories and appreciations; but it is interesting to consider the record in relation to Gorgas, the man. His personality was not that of the indomitable leader whose word is law and who brooks no interference. He was a man of soft word and kind thought, seeking counsel and gathering around himself associates whom he trusted and who put their trust in him. He made many friends through his ever gracious manner. He greeted all with a smile of welcome, ever ready to hear both sides of any case which might come before him in the many positions of leadership which he held. He commanded the love and respect of all with whom he came in contact. It was this that made it possible for Dr. Gorgas to accomplish the great works that have made his name a household word in every civilized land. "In the conquest of science over disease," said Welch, on one of the many occasions in which the medical profession honored General Gorgas, "in the saving of untold thousands of human lives and human treasure, in the protection of our shores from the once ever-threatening scourge of yellow fever, in the reclamation to civilization of tropical lands—in results such as these are to be found the monuments of our laureate, his victories of peace."

3. Schneider, E. C.: A Cardiovascular Rating as a Measure of Physical Fatigue and Efficiency, J. A. M. A. 74:1507 (May 29) 1920.

BEHAVIOR OF UNCOOKED STARCH IN THE DIGESTIVE TRACT

When uncooked starch is subjected to the action of human saliva in the biochemical laboratory, it is converted slowly and incompletely at best into soluble products. The student has been taught that the starch grains must be ruptured and their contents "liberated" to insure good amylolytic digestion. The membranes enveloping the starch grains have been regarded as relatively impervious to digestive juices and the enzymes which they contain; hence the importance of cooking starch to render it readily digestible. It has been reported, in harmony with this point of view, that no starch appears in the feces after a meal of well cooked wheat or rye bread, rice or potatoes, or even legumes prepared in the form of purée. Legumes not in this form—for example, string beans eaten as salad—may resist the action of the digestive juices so that the starch contents of the cell are untouched, and the vegetable cells appear in the feces. These facts explain the appearance of bread in the feces if the bread is badly baked, or if such a "heavy" bread as pumpernickel is eaten. The imperfectly heated bread contains starch granules whose coverings are impermeable to the digestive juices, as are also many of those in the unbolted rye of pumpernickel.[1] Despite these traditional teachings, it appears from recent investigations conducted in the Office of Home Economics of the U. S. Department of Agriculture [2] that current statements categorically claiming that starch in the "raw" state is to man an almost indigestible substance must be revised. The proof of the pudding is the eating. Langworthy and Deuel [2] have fed to men fairly large quantities of raw starches in the form of frozen puddings resembling ice cream in taste and texture. The starch granules were neither swollen nor broken, yet ingested quantities exceeding 200 gm. a day disappeared from the gastro-intestinal tract. Raw corn and wheat starches were found to be

1. Lusk, Graham: The Elements of the Science of Nutrition, Philadelphia, W. B. Saunders Company, 1917, p. 52.

2. Langworthy, C. F., and Deuel, H. J.: Digestibility of Raw Corn, Potato, and Wheat Starches, J. Biol. Chem. 42:1 27 (May) 1920.

completely assimilated, and no trace of them could be found in the feces. Experiments on raw potato starch gave values for its digestibility varying from 62.3 to 95.2 per cent.; the average was 78 per cent. The digestibility of the other constituents of the diet was not affected to any great extent by the large amounts of raw starch ingested. Why the ingestion of potato starch caused disagreeable physiologic disturbances not noted in the other experiments with raw corn and wheat starches remains to be ascertained. Whatever the explanation of this undoubted capacity for the utilization of at least some uncooked starches in the digestive tract of man may be, the newly demonstrated facts place the potency of the alimentary apparatus of man in a new and favorable light.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CONNECTICUT

Million for Medical School.—A gift of $1,000,000 to Yale University from the general education fund has been announced. The fund is to be used for the development of the New Haven General Hospital through the medical school of the university.

Alumni Meeting.—At the forty-first annual meeting of the Yale Medical School Alumni Association, held June 21, in New Haven, under the presidency of Dr. Alfred G. Nadler ('96), New Haven, the principal address was delivered by Dr. Milton C. Winternitz, and the following officers were elected: president, Dr. Jeremiah J. Cohane ('98), New Haven; vice presidents, Drs. Frank L. Phillips ('06), New Haven, Gould S. Higgins ('01), North Haven, Samuel C. Harvey ('11), New Haven, David P. Smith ('12), Meriden, and Ralph A. McDonnell ('20), New Haven, and secretary-treasurer, Dr. Simon B. Kleiner ('15), New Haven.

Personal.—Dr. Milton C. Winternitz, professor of pathology in Yale University Medical School, has been elected dean of the school succeeding Dr. George Blumer, whose resignation takes effect at the close of the college year.——Dr. Alexander L. Prince, assistant professor of physiology in Yale University Medical School, has resigned to accept a position in the industrial research department of the Aetna Life Insurance Company.——Mr. Friend Lee Mickle has resigned as bacteriologist of the bureau of laboratories of the Connecticut State Department of Health to accept an appointment as director of laboratories of the bureau of health, Atlantic City, N. J.

ILLINOIS

Chiropractor Fined.—J. H. Cairns, 6241 Kimbark Avenue, Chicago, was arrested by the department of registration and education for practicing as a chiropractor without a state license. He pleaded guilty to the charge on June 28, and was fined $50 and costs.

Illegal Practitioner Fined.—Walter A. Huffman, Chicago, was arrested by the department of registration and education for practicing medicine without a license, and on June 20 was fined $25 and costs. In addition to the money fine, he was committed to the county jail for fifteen days.

Physician's License Revoked.—At a meeting of the Department of Registration and Education of Illinois, June 10, the license of Dr. John Paul Furno (also known as Dr. J. Paul Furnel) of Chicago was formally revoked on account of unprofessional and dishonorable conduct.

Hospital to Be Closed.—As the result of a visit of Surg.-Gen. Merritte W. Ireland, U. S. Army, to U. S. General Hospital No. 28, Fort Sheridan, it is announced that the institution will probably be closed October 1. At the time of General Ireland's visit there were less than 800 patients in the hospital.

Births Not Registered.—According to the computation of the health commissioner of Chicago, there were 98,412 births in Chicago during the last eighteen months, but of these only 72,076 were reported. He has, therefore, formed a board composed of Dr. Martin O. Heckard, chief of the bureau of vital statistics; Dr. H. O. Jones, assistant chief of the bureau of child hygiene, and Assistant Corporation Counsel Edgar A. Jonas to hear the explanations of parents and physicians summoned before them for failure to report births.

Drives for Hospitals.—The Federated Orthodox Jewish Charities of Chicago won their campaign for $100,000, June 24, when $65,000 in cash and $35,000 in pledges were turned in by workers.——Plans for a city wide campaign for a million dollars for buildings and maintenance of the consolidated Polyclinic and Henrotin hospitals were discussed at a meeting of the board of directors, June 23. The campaign will be inaugurated early in the fall.——More than $6,000 was raised in the tag day for the new Auburn Park Hospital fund.——A drive for $500,000 to rebuild the Edward Sanatorium, Naperville, has been started. This institution is a branch of the Chicago Tuberculosis Institute.

INDIANA

Typhoid at Shultztown.—Cass County has requested the state board of health to send a health officer to Logansport to take charge of the typhoid situation in Shultztown, a suburb of Logansport.

Nurses Elect New Head.—Margaret P. Church of Fort Wayne has been elected president of the state board of registration and examination for nurses. Edna Humphrey of Crawfordsville is the secretary of the board.

Personal.—Dr. Cloud M. Jackson, Elizabethtown, has been appointed coroner of Bartholomew County, succeeding Dr. George F. Cline, East Columbus, deceased.——Drs. Joel D. Sturdevant and Samuel W. Hooke have been appointed members of the board of health of Noblesville.——Dr. Fred L. Bunch, health officer of Muncie, who has been seriously ill following an operation for abdominal tumor, is reported to be improving.——Dr. John W. Cook, Pendleton, was stricken with cerebral hemorrhage, June 21.——Dr. John H. Plew, Martinsville, suffered a cerebral hemorrhage, June 9.

Found Guilty.—Dr. Frederick E. Crum, Indianapolis, and Frank J. Peacock, charged with having violated the Reed amendment by transporting 194 quarts of whisky from Cincinnati into Indiana, May 6, 1919, are said to have pleaded guilty and to have been fined $10 and costs each.——Frank Clark and Lottie Clark, accused of operating a soft drink establishment in Terre Haute which was the center of wholesale trading in narcotics, were sentenced, June 30. Clark was sentenced to four years' imprisonment in the federal prison, Atlanta, and to pay a fine of $1,000, and his wife was sentenced to imprisonment for two years in the Indiana Woman's Prison.

KANSAS

Personal.—Dr. John T. Scott, St. John, was elected president of the Seventh District Medical Association at its meeting in Hutchinson, June 17.——Dr. Milton O. Nyberg has succeeded Dr. William T. Doherty as city physician of Wichita.

State Board Items.—Drs. George R. Dean, McPherson, and Henry A. Dykes, Lebanon, have been reappointed members of the state board of medical examiners.——At the annual meeting of the Kansas State Board of Medical Examiners held in Kansas City, June 15, Dr. Charles W. Jones, Olathe, was elected president, succeeding Dr. George R. Dean, McPherson; and Dr. Henry A. Dykes, Lebanon, who has served as secretary for twelve years, was reelected.

LOUISIANA

Buy Parish Medical Society Building.—The local lodge of Elks has purchased the Orleans Parish Medical Society Building for $50,000. The research library of the society will be moved to the Hutchinson part of Tulane, and later on the society expects to purchase a new site for a building.

Personal.—Dr. Clarence Pierson, for fifteen years superintendent of the East Louisiana Hospital for the Insane, Jackson, has resigned.——Dr. J. George Dempsey, New Orleans, head of the antituberculosis bureau of the city board of health, has resigned to become statistician of the state board of health.

Hospital Items.—The staff of the Hotel Dieu, New Orleans, effected a permanent organization, June 15, and elected Dr. Marion S. Souchon, president; Dr. Homer J. Dupuy, Jr., vice president; Dr. Henry W. E. Walther, secretary, and Dr. Lucien A. Fortier, recorder.——Belvedere Private Sanatorium, New Orleans, has been taken over by the United States government, and will be utilized for the care of nervous and mental cases. Clarence H. Waring, P. A. Surg., U. S. Public Health Service, will have general charge of the institution and Dr. R. M. Connelly will be resident neurologist.

MAINE

Larger Quarters for Health Department.—The steady growth of the Maine Department of Health in the number of its workers and its lines of activity has necessitated an increase in the size of its headquarters in Augusta. The present health building on the State Hospital grounds is to be increased by the extension of the south wing, and the new offices will be ready for occupancy in September.

Health Department Appointments.—William H. Sawyer, Jr., assistant professor of biology in Bates College, Lewiston, has been appointed assistant in the diagnostic laboratories during July, August and early September. E. S. Lawrence, Gardiner, has been made summer assistant in the water laboratory in the division of sanitary engineering, and William Lawrence has been appointed hotel inspector for the summer season.

Public Health Association Organized.—The former state antituberculosis association has been reorganized as the Maine Public Health Association with a board of eighty-five directors and the following officers: president, Dr. Elmer D. Merrill, Foxcroft; vice presidents, E. M. Hamlin, Milo, Dr. Sylvester J. Beach, Augusta, and Henry Richards, Gardiner; secretary, Mrs. Howard R. Ives, Portland, and treasurer, Ralph Whittier, Bangor.

MARYLAND

Pleads Guilty.—Dr. Chauncey T. Scudder, Arlington, arrested some time ago on a charge of violation of the Harrison Narcotic Law, is said to have pleaded guilty in the district court, June 17, of administering drugs in violation of the law. His sentence has been suspended until October.

Personal.—Dr. Dwight H. Mohr, Baltimore, has been appointed chief police surgeon of Baltimore, succeeding Dr. T. H. Athey.——Asst. Surg.-Gen. Henry R. Carter, U. S. Public Health Service, superintendent of the United States Marine Hospital, Baltimore, sailed from New York, June 19, for Pieta, Peru, where he will engage in sanitary work for the Peruvian government with special reference to yellow fever and bubonic plague.——Dr. Carl M. Van Poole, Mount Airy, has been appointed local surgeon of the Baltimore and Ohio system.

MASSACHUSETTS

Personal.—Dr. James A. McKeon, Lynn, who was committed to the State Hospital, Danvers, for observation, is said to have escaped from the institution.

MICHIGAN

Branch Laboratory Established.—Plans have been formulated by the state health department and the officials of Port Huron whereby a branch laboratory of the state health department will be established in that city.

Summer Health Camp.—The Detroit Department of Health has decided to establish a summer health camp with accommodations for 100 children and the city council has appropriated $10,000 for this purpose. The camp will be in charge of health department officials.

Smallpox Subsiding. — The smallpox outbreak, which assumed rather alarming proportions in Detroit last month, has decreased greatly and there are now only about seventy cases in the city. The disease was confined almost entirely to negroes and to certain regions in four wards of the city.

Hospital Association Meeting.—At the annual meeting of the Michigan Hospital Association, held in Detroit, last month, Dr. Christopher G. Parnell, Ann Arbor, superintendent of the University Hospital, was elected president; Dr. Stewart Hamilton, superintendent of the Delray Industrial Hospital, Miss Grace McElderry of Hackley Hospital, Muskegon, and Miss Anna M. Schill, of Hurley Hospital, Flint, were made vice presidents; Dr. Durand W. Springer, University Homeopathic Hospital, Ann Arbor, was elected secretary, and Dr. Herman Ostrander, Kalamazoo, treasurer.

NEW JERSEY

New State Officers.—At the annual meeting of the Medical Society of New Jersey, held at Spring Lake, June 16-19, under the presidency of Dr. Gordon K. Dickinson, Jersey City, the following officers were elected: president, Dr. Philander A. Harris, Paterson; vice presidents, Drs. Henry B. Costill, Trenton; James Hunter, Jr., Westville, and Wells P. Eagleton, Newark; corresponding secretary, Dr. Harry A. Stout, Wenonah (reelected); recording secretary, Dr. William J. Chandler, South Orange (reelected); treasurer, Dr. Archibald Mercer, Newark. The next annual meeting will be held at Atlantic City.

NEW MEXICO

New State Board Member.—Dr. William R. Lovelace, Albuquerque, has been appointed member of the state board of medical examiners to fill the unexpired term of Dr. Charles B. Kohlhousen, deceased.

County Full-Time Health Officer.—San Miguel County has authorized a levy for the purpose of maintaining a full-time county health officer. The Rockefeller Foundation will pay $3,000 toward the salary and maintenance of the office.

Schools and Health Crusade.—Ten public schools in New Mexico were winners in the various divisions of the health crusade. These include the schools at June, La Madera, Sapello, three at Clovis, Ventanas, Carlsbad, Hondo and Socorro.

Public Health Association Still Active.—Some misunderstanding has been caused on account of the recent closing of the offices of the National Tuberculosis Association in Albuquerque. The office of the public health association is still open and will continue under the direction of Mr. Clinton P. Anderson.

NEW YORK

Mullan Bill Signed.—Governor Smith has signed the Mullan bill to amend the public health law in relation to the practice of nursing, by including the terms of "trained, certified and graduate" nurse along with that of "registered nurse."

Detectives Discover Drug Cache.—Police of the Italian squad discovered $75,000 worth of cocain in the home of Louis Mauro, 160 Carroll Street, Brooklyn, and $150,000 worth of cocain and other habit-forming drugs in the home of Giuseppe Gangarossa, 170 Carroll Street. These men confessed that the drugs were smuggled to them from Italy, though the last consignment came from Germany. They state that their chief market was along the water front of Brooklyn.

Public Health Graduates Organize.—Graduates of the 1919 and 1920 graduate course in infectious diseases and public health, which has been conducted under the joint auspices of the Albany Medical College and the state department of health by Dr. Charles C. Duryee, Schenectady, medical director, met at Albany Medical College, June 24, and organized the Eastern New York Post-Graduate Public Health Association, and elected the following officers: honorary president, Dr. Charles C. Duryee, state department of health; president, Dr. Melville D. Dickinson, Troy; vice president, Dr. William C. Treder, Scotia, and secretary-treasurer, Dr. William G. Keens, Albany. It was decided to hold two meetings annually, one of these to be in conjunction with the annual state conference of health officers. After the meeting a dinner was held, and the certificates were presented to the class of 1920.

New York City

Golden Wedding.—Dr. and Mrs. Lewis Stephen Pilcher, Brooklyn, celebrated their golden wedding anniversary, June 21, at their country home, "The Eagle's Nest," Lake Hopatcong, N. J.

Drug Smugglers Arrested.—Revenue inspectors of the port of New York recently arrested a former detective as he landed from an Italian steamer. In a false bottom of his trunk were found 840 packages of cocain. According to the customs officials, this country, during the past year, has been supplied almost exclusively with narcotics for the illicit trade from Italian ports.

NORTH CAROLINA

Personal.—Dr. Charles E. Lowe, Wilmington, has resigned as health officer of New Hanover County and has been succeeded by Dr. R. A. Herring, at present stationed at Milledgeville, Ga.

Antituberculosis Clinics.—From June 14 to July 3, a series of antituberculosis clinics was held in Gaston County under the direction of the state board of health and in immediate charge of Dr. Joseph L. Spruill of the state sanatorium, Columbia.

Betterment Fund for Hospital.—Physicians of Raleigh, headed by a local committee composed of Drs. Hubert A. Royster, John B. Wright, James W. McGee and Hubert B. Heywood, have recently secured more than $100,000 for the betterment fund of the Rex Hospital.

Antityphoid Campaign.—The authorities of Gaston County with the cooperation of the North Carolina State Board of Health offered the people of the county free inoculation against typhoid fever. Work will be under the charge of Dr. Charles S. Mangum, Chapel Hill, of the medical faculty of the University of North Carolina, and Dr. William B. Hunter, Wilmington, superintendent of public welfare, and will continue until July 24.

Education Campaign in Health and Sanitation.—Mr. W. A. McGirt, general manager of the North Carolina Landowners' Association, announces that an intensive educational campaign in hygiene and sanitation will be conducted in eastern North Carolina as a part of the activities of the association. The campaign will be in the form of free illustrated lectures to be given by Dr. Charles E. Low, formerly superintendent of health of Wilmington and New Hanover County. The program includes the full-time service of Dr. Low as sanitary expert, who will deliver illustrated health lectures on malaria, typhoid fever, hookworm and the relation of insects to the transmission of these diseases; soil and water pollution, necessity of privy sanitation, undernourishment, faulty diet and the need of a larger milk supply.

PENNSYLVANIA

Personal.—P. W. Whiting, in charge of biology at Franklin and Marshall College, Lancaster, has resigned to accept a position at St. Stephens' College, Annandale-on-Hudson, N. Y.——Dr. Robert M. Hursh has been appointed assistant in the Harrisburg genito-urinary clinic.——Drs. John Gilbert, Frank V. McConkey, Gibson Smith, Herman H. Farkas and Alfred A. Long have been appointed assistants to the reorganized tuberculosis clinic at York.——Dr. Charles C. Cooner, Kulpmont, has been appointed assistant at the Mt. Carmel Tuberculosis Clinic.

Philadelphia

Personal.—Dr. William W. Keen, emeritus professor of surgery at Jefferson Medical College, was awarded the degree of Doctor of Science by Harvard University at the recent commencement exercises.——Dr. Alonzo E. Taylor, professor of physiologic chemistry at the University of Pennsylvania, was given the honorary degree of Doctor of Laws by the University of Wisconsin, Madison.——Dr. Hugh M. Miller, Philadelphia, has been appointed chief of the genito-urinary clinic of the Phipps Institute.——Dr. Leo J. Rostow, dispensary physician to the Babies' Hospital, Philadelphia, was presented with a silver cup and fifty volumes of books by the board of managers at the annual meeting, June 14.

RHODE ISLAND

Return from the Orient.—Dr. John M. Peters, Providence, retiring president of the Rhode Island Medical Society and superintendent of the Rhode Island Hospital, and Dr. Frederick T. Rogers, Providence, have returned after a six months' sojourn in the Orient.

New State Officers.—The annual meeting of the Rhode Island Medical Society was held, June 3, in Providence. Dr. Simon Flexner, New York, delivered an address on "Lethargic Encephalitis," illustrated by motion pictures. The following officers were elected: president, Dr. Jesse E. Mowry, Providence; vice presidents, Drs. Herbert Terry and George S. Mathews; secretary, Dr. James W. Leech (reelected), and treasurer, Dr. Henry J. Hoye, all of Providence.

Fiske Prize Awarded.—Announcement was made by the president of the Fiske fund that the prize of $200 offered for the best essay on the subject "Surgical Lessons from the Great War" has been awarded to Dr. Allen G. Rice, Springfield, Mass. Under the terms of the Fiske Fund, a prize of $200 annually is awarded for the best essay on a subject selected by the trustees. The subject for next year is "Compulsory Health Insurance." The contest is open to all physicians and details regarding it may be obtained by addressing Dr. Halsey DeWolf, Providence, secretary of the fund.

SOUTH CAROLINA

Medical College Building Sold.—The state sinking fund commission has sold the old South Carolina College building, Charleston, to Montague Triest for $12,000.

Clinic Day.—Clinic day was celebrated in Columbia, June 8, when more than 150 surgeons from all over the state were the guests of the Columbia Medical Society. The day was devoted to clinics, and in the evening a banquet was given with addresses.

Venereal Disease Clinics.—A free clinic for the treatment of venereal disease is to be established in Union. Local support to the extent of $4,000 has been secured, and the state board of health has agreed to furnish $2,000. This will be sufficient to carry on the work for one year.

Personal.—Dr. Elizabeth S. Van Duyne, resident physician and professor of physiology and hygiene at Converse College, Spartanburg, has resigned to accept a similar position at Goucher College, Baltimore.——Mrs. Frances M. Montgomery, formerly superintendent of the Chick Springs Sanatorium and Steedly Clinic at Chick Springs, will be connected with the University Sanatorium, which is just being completed at Anderson.

Commencement.—The annual commencement exercises of the Medical College of South Carolina were held at Charleston, June 3, when degrees were conferred on a class of fourteen. These faculty changes were announced: Dr. J. P. Richardson has been appointed instructor in clinical pathology; Dr. J. J. LaRoche, instructor in medicine; Dr. M. W. Beach, instructor in pediatrics; Dr. H. S. Mustard, instructor in medicine; Dr. H. P. Jenkins, Jr., assistant in obstetrics, and Dr. William Rhett, assistant in pediatrics. The college cup awarded the honor graduate in medicine and the Blease medal were won by Dr. Harry E. Levit.

WISCONSIN

Fire in Sanatorium.—Damage to the extent of more than $2,000 was done by fire to the Mount Washington Tuberculosis Sanatorium, Eau Claire, June 19. The patients were removed without casualty.

New District Officers.—At the annual meeting of the Ninth Councilor District Medical Society, held in Stevens Point, May 14, Dr. Victor A. Mason, Marshfield, was elected president, and Dr. Joseph F. Smith, Wausau, was reelected secretary-treasurer.

Plaster Specialist Sentenced.—The supreme court of the state has sustained the decision of the lower court which sentenced "Dr." Till, the so-called "plaster specialist" of Barron County, to the county jail for six months. The decision was on the ground that the defendant had had a fair trial and was properly convicted.

New Clinic for Ashland.—The new clinic building in Ashland, recently built by Dr. John M. Dodd, is two stories and basement in height and will contain ten complete sets of offices. Dr. John M. Dodd has been elected president of the clinic; Dr. Adellon P. Andrus, vice president; Dr. Clyde J. Smiles, secretary, and Miss E. Peterson, treasurer.

Bedside Clinics for Physicians.—A series of clinics in internal medicine with ward rounds extending over two weeks is offered for physicians at the Milwaukee County Hospital, Wauwatosa, by Dr. Louis M. Warfield. The classes are limited to six physicians. Courses begin July 12, July 26, August 9 and August 23. No fee is charged. Applications should be made to the superintendent, Milwaukee County Hospital, Wauwatosa, Wis.

Staffs Selected.—The directors of the Madison General Hospital, on May 19, selected a temporary staff. The surgical staff will consist of Dr. Thomas W. Tormey, chief of staff, and Drs. Frederick A. Davis, Corydon G. Dwight, Louis R. Head, Reginald H. Jackson, Walter H. Sheldon and Arthur G. Sullivan. The medical staff will consist of Drs. Hugh P. Greeley, Cornelius A. Harper, Harry M. Kay, William T. Lindsay, Julius C. Sommers and Robert Van Valzah.

Will Give Complete Medical Course.—Legislation recently enacted in Wisconsin provides for the offering of a complete four-year medical course by the University of Wisconsin Medical School. It is reported that the teaching of the third year will be offered in the fall of 1923, and that of the fourth year in the fall of 1924. The legislation provides, also, for the establishing of a state hospital at Madison. A university infirmary and the Bradley Memorial Hospital have already been established on the university campus.

CANADA

Professional Fees in Montreal.—The Montreal Medico-Chirurgical Society has ruled that physicians hereafter shall make charges for telephone advice and prescriptions. There will also be an advance in day and night fees in the near future.

Center for Vital Statistics.—Ottawa is now headquarters for vital statistics for Canada. There will be tabulated returns from the dominion. Formerly, this was done by each province. All provinces will take advantage of the new method.

Mental Defectives in Toronto Schools.—Three hundred and twenty-five pupils have been found in eleven schools of Toronto with an intelligence quotient of less than 80 per cent. Out of 122 defectives below 70 per cent., 100 are possessed of characteristic stigmas of degeneration. Dr. Charles K. Clarke, who made the investigations, recommends that the board of education segregate low grade defective children in two or more special classes, centrally located.

GENERAL

Eye and Ear Men to Meet.—The fifteenth semiannual meeting of the Sioux Valley Eye and Ear Academy will be held at the Hotel Fontenelle, Omaha, July 14, under the presidency of Dr. James E. Reeder, Sioux City, Iowa.

Railway Surgeons Elect Officers.—At the annual meeting of the Central of Georgia Railway Surgeons' Association, held in Savannah, June 3 and 4, the following officers were elected: president, Dr. George W. Williamson, Hartford, Ala.; vice presidents, Drs. Benjamin L. Bridges, Ellaville, Ga., and R. Earl Evans, Gordon, Ga., and secretary-treasurer, Dr. Craig Barrow, Savannah, Ga.

Specialists Hold Annual Meeting.—At the annual meeting of the American Laryngological, Rhinological and Otological Society, held in Boston, June 2-4, the following officers were elected: president, Dr. Lee Wallace Dean, Iowa City; vice presidents, Drs. Harmon Smith, New York, Joseph C. Beck, Chicago, Joseph B. Greene, Asheville, N. C., William V. Mullin, Colorado Springs, Colo., and Hill Hastings, Los Angeles; secretary, William H. Haskin, New York, and treasurer, Dr. Ewing W. Day, Pittsburgh.

Bequests and Donations.—The following bequests and donations have recently been announced:

Woman's and Mount Sinai hospitals, New York, and Middlesex, N. J., Hospital, each $5,000 by the will of Henry J. Duveen, New York.

Vermillion County Hospital, Clinton, Ind., a donation of $10,000 to supplement $100,000 voted by the county, by Mr. H. M. Ferguson, Clinton, president of the county board.

Cornell University, $500,000 for the endowment of research professorships and to provide facilities for scientific work, a donation by August Heckscher of New York.

Grant Hospital, Chicago, $5,000 by the will of Harry Rubens.

American Hospital, Neuilly, donations of 250,000 francs by George Edward Kessler, St. Louis, and 100,000 francs by Louis D. Beaumont, of the Aero Club of America.

Gifts to Universities and Colleges.—The following appropriations have been made to medical schools in the United States by the trustees of the General Education Board:

Washington University Medical School, St. Louis, for endowment, $1,250,000; for additional laboratory facilities and equipment, $70,000.

Yale University Medical School, New Haven, Conn., toward a total of $3,000,000 for endowment, $1,000,000.

Harvard Medical School, Boston, for improved facilities in obstetrics, $300,000; for development of teaching in psychiatry, $350,000.

Johns Hopkins Medical School, Baltimore, for development of a new department of pathology (toward a total of $600,000) $40,000.

The trustees of the Rockefeller Foundation have also voted the following appropriations:

Dalhousie University Medical School Halifax, for buildings and equipment, $400,000, and for endowment, $100,000.

Medical Research Foundation of Elizabeth, Queen of the Belgians, Brussels, for general purposes of medical research, 1,000,000 francs.

College Not Recognized.—At its meeting, held June 18, at Atlanta, the National Eclectic Medical Association adopted the following resolution:

"WHEREAS, The Regular State Medical Board of Arkansas, has recently sent a resolution to every examining board in the United States, calling attention to the fact that the Arkansas Eclectic Medical Board of Examiners persists in examining and licensing graduates of a nondescript medical college of Kansas City, Mo.; primarily it may be to embarrass that college, but secondarily it may be an attempt to reflect on Eclectics in general, and this national body in particular.

"*Resolved*, That the secretary of this Arkansas regular board be notified that the aforesaid institution is *not* recognized as an eclectic college by this body."

This college is reported as not recognized in Missouri, its home state, nor is it probable that it would be recognized by the regular medical boards in the adjoining states. It has been reported that the college called itself "eclectic" in order that its graduates might appear before the Arkansas Eclectic Board of Medical Examiners and by that makeshift secure licenses.

LATIN AMERICA

Plague in Mexico.—One more death from bubonic plague and one new case were reported at Vera Cruz on July 4.

Reorganization of the School of Medicine of Bolivia.—The government of Bolivia has recently reorganized the School of Medicine of La Paz and provided funds for the school laboratories.

Sanitary Information Office Organized in Chile.—There has been recently organized in the department of public health of Chile a branch of the International Sanitary Commission of American Republics.

Chilean Medical Delegates.—A recent law adopted in Chile provides for the appointment of a medical commission which will come to the United States to study the methods followed in the antivenereal campaign.

Biologic Products of Bolivia.—The Instituto Nacional de Bacteriologia of Bolivia provides free to citizens of that country the following products: antityphoid vaccine, antianthrax serum, antistaphylococcic vaccine, antipneumococcic vaccine, diphtheria antitoxin and tuberculin. During the second part of the year 1919, 75,000 ampules were distributed.

Yellow Fever in Salvador.—An epidemic of yellow fever was reported, June 24, in the northwestern part of Salvador near the Guatemalan frontier. The advices state that forty-nine cases have been discovered, and that seventeen of these patients have died.——Yellow fever was reported, June 21, at Sonsonate, in the southwestern part of Salvador.

Vaccination at El Salvador.—During the year 1919, 143,579 persons were either vaccinated or revaccinated at El Salvador. The virus was furnished by the vaccine institute of that country.—— During the years 1916-1919 the uncinariasis department of El Salvador examined 84,136 persons, 41,915 of whom were found infected and 12,118 of whom were cured.

Cuban Delegate in the United States.—Dr. Fernando de Plazaola, chief of the division of quarantine of the department of sanitation of Cuba has been studying in New Orleans the methods employed to control their previous plague outbreak.——The department of sanitation of Cuba has designated Miss Martina Guevara, chief of the public health nurses, to study nursing methods in the United States.

FOREIGN

Plague in Java.—The *Nederlandsch Tijdschrift* states that there were 798 cases of plague reported in Java during the month of April, with 797 deaths. In March there were 936 fatal cases.

Hospital Fund.—The American Hospital at Neuilly, France, has thus far received 2,750,000 francs toward the fund of 7,000,000 francs which is being collected for the purpose of enlarging the institution.

Births Exceed Deaths in Spain.—During 1919, according to vital statistics published by the *Official Gazette*, there were 585,352 births in Spain and 482,030 deaths. The birth rate was 28.25 per thousand and the death rate, 23.26.

Monument to Dr. Reymond.—A monument was recently erected at Montbrison, France, in memory of the men from the region who lost their lives in the war and in particular of Dr. E. Reymond, senator from the Loire district and military aviator.

Bubonic Plague.—June 26, bubonic plague was reported from Catania, Sicily, by the American consul there. Several cases have occurred, with two deaths.——Assistant Surgeon Carl Michel, U. S. P. H. S., is in charge of the work against bubonic plague at Vera Cruz.

Prize to Pende.—Dr. Nicola Pende, professor of pathology at University of Palermo, was recently awarded the Balbi-Valier prize by the Venice Reale Istituto for his works on the organs of internal secretion. This prize is conferred for the best medical works published in the preceding period.

Flechsig's Fiftieth Professional Anniversary.—The first volume of Prof. P. E. Flechsig's "Anatomy of the Human Brain and Spinal Cord on a Myelogenetic Basis" appeared May 23, the date of his fiftieth professional anniversary. He has been professor of psychiatry at Leipzig since 1877 and chief of the clinic for nervous and mental diseases.

Postgraduate Work in London.—Physicians seeking graduate medical work in London may obtain full information in regard to the opportunities in that city by writing to the

Postgraduate Medical Association, 1 Wimpole Street, London, W. 1, England. Better information will be secured if, in writing, the particular kind of work desired is mentioned.

Tokens of the Gratitude of France.—Several American names are in the list recently published of those to whom the French government has awarded the Médaille de la reconnaissance française. Among them are Drs. Wyatt and Baribault, and the women physicians: Drs. Finley, Chills, Klotz, Doherty and Fraser, nearly all connected with the hospital at Luzancy.

Monument to Living Pediatrician.—Our Spanish exchanges give an account of the statue of Dr. Gómez Ferrer recently unveiled at Valencia. The resolution to erect the monument was adopted at the Asamblea Médica Regional held at Valencia in 1918, as a testimony of the gratitude of the mothers of Valencia to the incumbent of the chair of children's diseases at the University of Valencia, and leader in plans for welfare work for children.

Medical Students and Chemical Experiments.—The *Deutsche medizinische Wochenschrift* relates that in an explosion in the chemical laboratory at Münster seven students were killed, including two medical students. The editor comments that this sustains his appeal for separate lectures for the medical students. "Why," he asks, "should medical students have anything to do with experiments with explosives, as was the case in this lamentable occurrence?"

Exhibition for Dental Hygiene.—A traveling museum to educate the public in the care of the teeth has been organized in the Netherlands, and was on exhibition at Rotterdam for ten days. It was organized by the national dental association with the aid of the Green Cross Society. The aim of the display is said to be to educate not only the public in the care of the teeth and the dangers of neglect, but to inform the authorities as well, so that they will appreciate the necessity for concerted efforts to save the teeth of the rising generation. Examination of 20,000 schoolchildren in one Holland city showed carious teeth in 80 per cent. Women volunteers explain the exhibits to visitors.

The Crisis in Contract Practice in Germany.—The *Münchener medizinische Wochenschrift* of May 28 relates that at noon, May 25, all the contracts with the sickness insurance companies having expired, physicians all over the country were released from all contract obligations, and the Leipziger Verband, the solid front of the organized profession, has ordered that from that hour the krankenkassen insured are to be treated by the physicians as private patients, with cash payment at once for each service rendered. The fee to be asked is 8 marks for each office call and 12 marks for each visit, with specified higher rate for extra services. No certificates for the patients are to be made out, but prescriptions are to be written on the physician's own blanks, and marked "No renewal." The *Wochenschrift* adds, "These orders of the Leipziger Verband are to be unconditionally obeyed. On the strict and invariable compliance with them depends the outcome of the conflict into which the profession in Germany has now entered. Let no one think of his private advantage! The welfare of the whole is in the last line also what is best for the individual." As THE JOURNAL has already mentioned, at the recent conference between the representatives of the organized profession and of the krankenkassen, when the former stated the tentative terms on which the contracts would be renewed, the representatives of the krankenkassen got up and left the room. The last mail brings word that a partial agreement has finally been reached between the parties, which is regarded as essential progress toward the desired "free choice of physicians." The krankenkassen have also agreed to found institutions to promote social hygiene. The question of remuneration is still unsettled and had to be left to a third impartial committee.

Deaths in Other Countries

Dr. **Demons,** formerly professor of surgery at the University of Bordeaux.——Dr. **T. Barrois,** professor of parasitology at the University of Lille.——Dr. **R. Kretz,** privat-docent of pathologic anatomy at the University of Vienna and author of seventy-five articles on this and allied subjects.——Dr. **T. Debaisieux,** former professor of surgery at the University of Louvain, at one time president of the Belgian Academy of Medicine and of the Belgian Surgical Association, aged 73. His son succeeded him in the chair of surgery.——Dr. **K. Franz,** chairman for ten years of the quackery committee of the German Aerztevereinsbund.——Dr. **F. Schatz,** former professor of gynecology and obstetrics at the University of Rostock, aged 78.

Government Services

General Hospitals Named in Memory of Distinguished Medical Officers

The War Department has inaugurated the policy of naming its general hospitals in memory of deceased medical officers of the Army who have made distinguished records in the service. For many years it has been the policy to identify Army hospitals by numbers and particular location of the Army camps or forts.

This new policy is one which will appeal to the sentiment and traditions of the Medical Corps of the Army and will identify the medical profession more conspicuously in military affairs than heretofore.

In accordance with this new policy the War Department has issued General Order No. 40 which provides as follows:

General Hospital No. 41, Staten Island, N. Y., is announced and will be known as the "Hoff General Hospital, Staten Island, N. Y.," in honor of Col. John Van Rensselaer Hoff, M. C., U. S. Army (born 1848, died 1920), who throughout his entire military career devoted unremitting effort to the efficient organization and administration of the medical department and was the pioneer in the organization and development of the enlisted branch thereof, formerly known as the Hospital Corps.

General Hospital No. 28, Fort Sheridan, Ill., is announced and will be known as the "Lovell General Hospital, Fort Sheridan, Ill.," in honor of Surg.-Gen. Joseph Lovell, U. S. Army (born 1788, died 1836), who served as Surgeon-General of the Army from 1818 to 1836. (The first formal organization of a Medical Department for the Army was prescribed by Congress in 1818 and by virtue of that Act he was appointed Surgeon-General from Hospital Surgeon, being the first officer to bear that title.)

General Hospital No. 6, Fort McPherson, Ga., is announced and will be known as the "Lawson General Hospital, Atlanta, Ga.," in honor of Surg.-Gen. Thomas Lawson, U. S. Army (born 1795, died 1861), who served as Surgeon-General of the Army from 1836 to 1861. (Awarded brevet rank of brigadier-general in 1848 for meritorious conduct in the Mexican War.)

General Hospital No. 19, at Oteen, N. C., is announced and will be known as the "O'Reilly General Hospital, Oteen, N. C.," in honor of Brig.-Gen. Robert Maitland O'Reilly, U. S. Army (born 1845, died 1912), who served as Surgeon-General of the Army from 1902 to 1909, and under whose administration the Medical Reserve Corps of the Army was established.

General Hospital No. 21, at Denver, is announced and will be known as the "Fitzsimons General Hospital, Denver," in honor of First Lieut. William Thomas Fitzsimons, Medical Officers' Reserve Corps, U. S. Army (born 1889, died 1917), a skilled surgeon and the first officer of the U. S. Army killed in the World War. He met his death at Dannes-Camiers, France, Sept. 4, 1917, in an air raid by the enemy while serving with Base Hospital No. 5, U. S. Army. The name also fittingly commemorates the eminent services rendered by the civil medical profession of America as members of the Medical Corps of the Army during the World War.

The new hospital to be constructed on the military reservation at El Paso, Texas, for which funds have already been appropriated, is announced and will be known as the "William Beaumont General Hospital, El Paso, Texas," in honor of Major William Beaumont, Surgeon, U. S. Army (born 1785, died 1853), who during his service as a medical officer of the Army conducted epoch-making investigations of the physiology of digestion, and as a result of his researches became the leading physiologist of the country and the first to make an important and enduring contribution to that science.

The Department Hospital, Honolulu, Hawaii, is announced and will be known as the "Tripler General Hospital, Honolulu, Hawaii," in honor of Major Charles Stewart Tripler, Surgeon, U. S. Army (born 1806, died 1866), who served as a Medical Director of the Army of the Potomac during the Civil War, and as a distinguished author published in 1858 his celebrated manual on the examination of recruits. (Awarded brevet rank of Brigadier-General in 1865 for faithful and meritorious service during the Civil War.)

The Department Hospital, Manila, P. I., is announced and will be known as the "Sternberg General Hospital, Manila, P. I.," in honor of Brig.-Gen. George Miller Sternberg, U. S.

Army (born 1838, died 1915), eminent bacteriologist and sanitarian, who served as Surgeon-General of the Army from 1893 to 1902, and founded the Army Medical School. (Awarded brevet ranks of captain and major in 1865 for faithful and meritorious service during the Civil War.)

The Walter Reed General Hospital, Washington, D. C., will retain its present name.

The Army and Navy General Hospital, Hot Springs, Ark., will retain its present name.

The Letterman General Hospital, Presidio of San Francisco, Calif., will retain its present name.

Foreign Letters

MEXICO CITY

(From Our Regular Correspondent)

June 27, 1920.

Plague and Smallpox

The department of public health is still much concerned about the eradication of plague from the port of Vera Cruz. Some sporadic cases are still occurring. From April 19, when the first case was observed, to June 18, there were reported thirty-nine cases with twenty-three deaths, which is a high mortality rate. The campaign is being carried on with all energy, employing all the available scientific resources. There is already at hand a large supply of imported antiplague serum, and prophylactic vaccinations have been made on a large scale, utilizing vaccine received from the United States and also that prepared at the Instituto Bacteriológico Nacional. No time has been lost in carrying out deratization measures, as well as the isolation of plague patients and suspected cases. Occasionally, the authorities have had to contend with the ignorance of some families who refuse to allow their members to be sent to the pesthouse, and even with the criminal connivance of a German physician, who concealed a patient and was therefore arrested. Railroad communication has been reestablished from Mexico City to Vera Cruz, although quarantine of passengers is enforced and merchandise disinfected. Mention was made of a case of plague at Tampico, but after investigation it was found that the supposed patient had died of adenophlegmon of the axilla, following an infected wound of the hand.

Many cases of smallpox have been reported in the state of Oaxaca.

A New Department Planned

The Department of Public Instruction and Fine Arts, which was established in the last years of General Diaz's government, was suppressed during Señor Carranza's term of office. Since 1917, the only national center of culture has therefore been the National University. Its new rector, Lic. Vasconcelos, has explained his intention of asking the government to reestablish the department. In his opinion the department of public instruction must be a federal institution. This plan, if carried out, will among other things result in correcting or abolishing several of the state medical schools, which are very far from being ideal.

Child Welfare Congress Postponed

It was the intention to hold in this city the Congreso Mexicano del Niño in September. As in that month there will be held the postponed presidential elections, the board of directors of the congress has decided to postpone it until January, 1921. This is all the wiser, since Ing. Palavicini, the president of the organizing board, has left for Europe as extraordinary ambassador of the Mexican government to Belgium, France, England, Italy and Spain.

BELGIUM

(From Our Regular Correspondent)

May 30, 1920.

Death of Bersaques

By the death of Dr. Charles de Bersaques, one of the most active members of the Société de medecine de Gand, Flanders loses one of its most eminent surgeons. Dr. Bersaques was a very capable operator and had attained an enviable position at the Hôpital de la Biloque. He wrote several important works, especially on congenital club-foot and surgery of the large intestine.

The Effects of War on Children

M. Dubois presented before the Académie royale de Belgique certain data regarding the weight and height of Liége children between the ages of 6 and 17 years, in 1918. These data are based on observations of children who presented themselves at the canteens for debilitated children, and they include curves of the weight and height of boys and girls arranged in groups according to their state of health.

It appears from these findings that the classical figures of Quetelet are too low to apply to the present average population of our towns, that the children who escaped impairment of health up to 1918 were affected during that year, and that, at that period of the war, the debilitated children were much below the average weight and height of normal children, although they did not present any determinable symptoms of disease.

At a subsequent meeting of the Académie, M. Duthoit reported the physical condition and development of children in 1915-1919. He was attached to the schools patronized by Her Majesty the Queen and paid careful attention to the development of 600 children between the ages of 2 and 6 who were in care of these institutions. He showed the importance of a careful medical inspection of schoolchildren, and pointed out that tuberculosis was not highly prevalent among these children, but that rickets was found in 25 per cent. of the young children, while the older children were, in general, quite robust. M. Duthoit called attention to the fact that in the Yser region infants are generally healthy and sound from birth, and that the high mortality in the first year must be attributed to the almost total abandonment of breast feeding and the absolute ignorance of the mothers. It is his hope that the infant clinics which were established during the war will be continued and extended, as they are destined to bring excellent results.

Anglo-Belgian Congress of Hygiene

An Anglo-Belgian congress of hygiene, in which representatives of other allied nations also participated, was held at Brussels, May 20-25. The purpose of the congress was not to discuss abstract problems and to broach complex scientific questions, but to study the best means for protecting children, for improving the housing conditions, for combating tuberculosis and venereal diseases, and for promoting industrial, municipal, military and tropical hygiene. England has made great progress in these fields, and the creation of a ministry of health promises to render this progress more rapid and more certain.

As Belgium faces the same contingencies, an exchange of ideas between British and Belgian hygienists and a comparison of practical solutions would seem to be both interesting and highly advantageous.

The congress, organized by the Royal Institute of Public Health of England, with Dr. Réné Sand as Belgian secretary, had a success beyond all expectations; 500 members were registered from England, and 200 from Belgium. More than 300 papers were presented at the congress, which was

divided into the following sections: social hygiene; military, naval and tropical hygiene; municipal hygiene; industrial hygiene; hygiene of employed women (maternity protection and infant welfare), and bacteriology and chemistry. The main topics were the prevention of venereal diseases, regulations for the reconstruction of towns, and especially the lessons of the war from the point of view of military hygiene. Particular attention was given to the question of lighting as related to the hygiene of the industrial worker.

PARIS

(From Our Regular Correspondent)

June 17, 1920.

School Community Centers and Hygiene

Schoolbuildings are intended primarily for educational purposes, but by virtue of a law which permits of their use by certain qualified persons specified in the text, they have latterly been appropriated to public purposes. There has been a tendency to make the school more and more a place for public gatherings and a refuge for services of every nature foreign to school purposes. As a result, the class-rooms are often occupied from 8 a. m. to 10 p. m., and the continuous occupation of the premises prevents thorough disinfection and cleansing, while the presence of a large number of people constitutes in some measure an agency in the propagation of infectious diseases and a permanent danger to the health of the schoolchildren. The Conseil d'hygiène of the department of the Seine recently resolved to take all possible measures to restore the schools to their legitimatet functions and to restrict their use for purposes other than teaching.

French Literature in the United States

The Comité "France-Amérique" has recently designated a subcommittee of ten prominent men of France, including Dr. Henri Roger, dean of the Paris faculty of medicine, with directions that they prepare a monthly list of ten new French works which are particularly deserving of the attention of the public, more especially of Americans. One book will be chosen from each of the following categories: intellectual life; history and political science; economics, industry, commerce and finance; novels; poetry and art; ancient and modern literature and literary criticism; philosophy and sociology; law; medicine, and foreign travels. These monthly lists will be published in French and English, and will be sent to libraries, universities, editors, publishers and interested individuals in America.

Gift to the Medical Faculty of Strasbourg

At the last session of the University of Strasbourg, announcement was made of a gift to the medical faculty by Messrs. André and Edouard Michelin of French government bonds yielding an annual income of 50,000 francs. This is to be used for creating a prize for that scientist of France or allied nations who shall first discover an effective preventive or remedial agent for tuberculosis by experimentation on guinea-pigs or cattle. The donors do not desire that human experimentation be undertaken. From now and until the prize shall be awarded, the income is placed at the disposal of the Faculté for the establishment and support of a laboratory devoted exclusively to research on tuberculosis under direction of the professor of hygiene and bacteriology of the medical faculty.

In choosing the University of Strasbourg for the award of the new prize, Messrs. Michelin are giving expression to the feeling of pleasure which pervades all France at the return of Alsace and Lorraine to France, and they are testifying to their trust in the future of the great city where Pasteur did his earliest work.

Under the special regulations which will govern the award, the candidates for the prizes must furnish proof of the efficacy of the remedial agent before a committee composed of the dean of the medical faculty of Strasbourg, one professor named by the council of the faculty, the director of the Institute of Hygiene and Bacteriology of Strasbourg, the director of the Pasteur Institute of Paris, and a professor named by the council of the medical faculty of Paris.

Death of Professor Demons

Dr. Demons, former professor of clinical surgery at the Faculté de médecine de Bordeaux, died recently at the age of 78. Born in 1842 at Saint-Ciers-de-Canesse (department of the Gironde), Demons studied medicine at Bordeaux University, was appointed surgeon to the hospitals of Bordeaux in 1869, and at the foundation of the medical faculty became associate professor of surgery. In 1886 he was made professor of clinical surgery, which position he occupied until his retirement in 1911. Dr. Demons was national correspondent for the Académie de médecine from 1882, and was one of the organizers of the French congress of surgeons, over which he presided in 1891.

LONDON

(From Our Regular Correspondent)

June 19, 1920.

Clinical Units in Medical Schools

A new departure, which consists in the formation of "clinical units" in the medical schools, has already been mentioned in these columns. The University Grants Committee has issued an important memorandum on the subject, pointing out that their origin is twofold: the advance of medicine itself and the evolution of the form of medical education. Medicine itself was revolutionized in western Europe first by the renaissance, and then in our own times by the advance of biology in the middle of the last century, and the discovery of the etiology of infective disease in the last half of the century. These things gave a new content to medicine and formed the basis of profound changes. Then, in the second place, there has been an evolution in the education of the physician. A century ago he became a physician by apprenticeship; this was followed in due course by what may be called the hospital system—in other words, an application of the apprenticeship system on a large scale in the wards of a hospital; lastly, there came the more systematic education of the medical student in the preliminary sciences and the intermediate subjects before he was trained on the clinical side. The clinical unit is not a sudden offshoot or "outcrop," but a further stage in a long process of evolution. The relation to the state to this evolution began with various medical acts, and more recently the subsidizing of medical education by the government. In 1912, Abraham Flexner's Report on "Medical Education in Europe" was published, and *inter alia* it advocated a development of medical teaching by the formation of clinical units.

The British system of clinical teaching has been an applied apprenticeship by means of clerking and dressing, which has at least four great advantages: (1) The student himself became an observer and a physician; (2) a close personal relationship was established between the student and patient; (3) the art of medicine was taught by practice, and (4) the student was holding a responsible office and cultivating his sense of responsibility. These four points have proved invaluable, and have resulted in producing a good standard of physician, perhaps indeed the best in the world. But there are disadvantages. (1) The student's work tends to become empiric and not sufficiently inspired by the science of medicine; (2) the student is in the main brought into associa-

tion with the end-results of disease, and is insufficiently equipped to deal with disease at its beginnings; (3) instruction in clinical work tends to become discontinuous and unsystematic; his studies in biology and chemistry, in anatomy, physiology and pathology are systematized and organized on a scientific basis; his clinical instruction is, on the contrary, in a large degree unorganized.

While these virtues are great, the defects are serious and they become more serious from the advances of medicine. They are greatest in London, which has not a centralized teaching university like Edinburgh and other university centers, where the germ of clinical units and, indeed, almost their essentials have existed. These conclusions are reached: 1. The latest advances in sciences which affect medicine—chemistry and physics, anatomy and physiology, pathology and pharmacology—should be continually brought into the teaching of the clinical subjects and applied to the observation and treatment of disease. 2. In order that education may be of this scientific standard and that students may come into direct contact with knowledge at its growing point, there is needed a system of instruction by teachers actively engaged in scientific research. 3. Such teachers must be provided with proper equipment, adequate staff and sufficient time if their work is to be comparable with the best scientific and practical teaching of, say, a professor of physiology. The system of clinical units is designed to secure these ends. It should consist of three parts or units which should be interrelated and separable, dealing with medicine, surgery and obstetrics (including gynecology), respectively. In each of these subjects a clinical unit should include a professor or director, who would devote the greater part of his time to teaching, treatment and research, competent above everything else to teach, of sound scientific training, and possessing scientific imagination, who shall have: (*a*) an adequate whole-time and part-time staffs; (*b*) the control of wards (from fifty to 100 beds); (*c*) a proper and effective outpatient department; (*d*) ample laboratory accommodation for research and pathologic work; (*e*) adequate scientific equipment for effective clinical teaching, and (*f*) a postmortem service. Such units should work along with and supplement the ordinary ward services, in which practical teaching will still be carried on as before. But while the ordinary services are organized only for the immediate needs of the patient and the practical training of students, the clinical unit will, in addition, be especially equipped for scientific instruction and scientific research.

Dangerous Drugs Bill

The second reading of the dangerous drugs bill in the House of Commons has taken place. In moving it, Major Baird, undersecretary to the Home Office, said that it was to give effect to the international opium convention of 1912, which aimed at controlling throughout the world the traffic in opium and cocain and their preparations. During the war, Great Britain found it necessary to take action on her own account, owing to the spread of the cocain habit and the smuggling in the East, which caused trouble and delay with our merchant shipping in connection with China. A regulation was made to control the manufacture, sale and distribution of cocain, and a proclamation was issued prohibiting the importation of cocain or opium except under license. These measures did not prove altogether successful, owing largely to the difficulty of controlling smuggling of an article which could be brought in in such small quantities and so easily concealed as opium. The only effective control must come from international cooperation. The allied powers attached so much importance to this question that the ratification of the international convention of 1912 was made one of the conditions of peace, and embodied in the peace treaty. The bill seeks power to extend the provisions of the measure to any new derivative of morphin or cocain, or any drug likely to produce the same effect as these substances.

Munificent Rockefeller Gift to Medicine

The Rockefeller Foundation has offered the following gifts for the furtherance of medical education and research in this country: To University College Medical School the sum of $2,000,000 "toward a building and equipment program, substantially as submitted by the authorities of the school, and the further sum of $2,175,000 toward the support of clinical facilities and teaching in substantial conformity at the outset with the proposed plan," making a total of $4,175,000 for the medical school. To "the University of London in behalf of the University College, the sum of $950,000 toward a building and equipment program substantially as submitted by the authorities of the college, and the further sum of $900,000 toward the endowment of laboratory teaching in substantial conformity at the outset with the proposed plan," making a total of $1,850,000 for the college and a grand total of $6,025,000. At a meeting of the staff and students, the provost of University College said that he believed that the gift was the greatest single one ever made for educational purposes in this country. In moving a resolution of appreciation for this munificent and spontaneous gift, Dr. Eliott Smith, professor of anatomy in University College, said that it would insure that the requisite facilities for anatomic teaching and research, in close conjunction with those in physiology and pharmacology, would be provided in accordance with the scientific requirements of the time. The general scheme of anatomic teaching in this country was in a curious position. There was, for instance, no equipment for allowing students to study, in the anatomy department, such parts of the body as could be seen only by the artificial aid of a lens or lenses. There were no facilities for showing sections of embryos, or for allowing students to study this essential part of their work. Nor were there any facilities for the study of the experimental factors which determined the form of the body. It was now hoped to bring back to anatomy the parts of the subject, such as histology and embryology, which had been taken away from it. It had been the settled policy of University College to restore anatomy to the position which it should occupy, not only in the medical curriculum, but also in the field of research.

VIENNA

(From Our Special Correspondent)

June 16, 1920.

Socialistic Methods and Eight-Hour Day in Hospital Work

Since the radical change of government came into being in this country, one institute after the other has been conducted on socialistic lines, with only little attention being paid to the desirability of such measures from the standpoint of effectiveness. In the hospitals, also, all the latest ideas in regard to socialization have been introduced. In addition to inaugurating the eight-hour day, a working board (Betriebrat) had to be elected from among the hospital staff in such a way that each group of employees delegated a number of representatives to this board: the physicians, the nurses, the clerks, the artisans, the machine-hands and the patients have their representatives. The board is the real manager of the hospital, which "runs" the whole thing. No person, be it physician or charwoman, may be dismissed without the counsel of the board, and the dietaries, as well as the regulations of the daily work, are controlled by this council. Naturally, such a condition, which the medical staffs have repeatedly but vainly opposed, only tends to hamper seriously the efficacy of the medical work. By the adoption of the eight hour day through-

out the whole state in all occupations, the number of nurses had to be trebled, and the men engaged in permanent work (engines, automobiles, stoves) in the hospitals are now working in three shifts, meaning a double or treble expenditure. Things have taken such a turn that a few weeks ago a clinical attendant who had not protected the interest of the charwoman in a sufficient degree roused the anger of the majority of the working board of our general hospital. They demanded his dismissal for that reason. Of course, this demand was not fulfilled by the government. But the union of the hospital directors and heads of the ward addressed, in their turn, a memorandum to the board of health (the government), pointing out that the present conditions are intolerable. They chiefly demand that the unduly large nonmedical hospital staff be reduced. While in peace time and even during the war, two or three nurses were sufficient to minister to all needs of the patients of a ward, and stood always in close contact with their patients, now eight or ten nurses are attending the same number, without even a fraction of former satisfaction to the patients. Formerly, utmost care was extended; now, carelessness is not infrequent. The nurses, the real sisters of former times, have been replaced by a female nursing officer who works eight hours, not a minute longer, like a factory girl.

Naturally, the bad effect is felt by all patients; from 6 a. m. to 2 p. m. one sister nurses him, from 2 to 10 p. m. another, and then the night sister. Severely ill patients do not get the attention they require; furthermore, the number of patients in many hospitals is nearly equal to or exceeds but slightly the number of persons employed in the hospital, an unnatural condition. The consequence is that each patient costs the hospital from 65 to 85 kronen a day in the municipal hospital, even 115 kronen, while the hospitals get from the public treasury only 78 kronen. It is impossible to make both ends meet under such circumstances. These conditions tend to turn the hospitals into "asylums for nurses and hospital employees," as the memorandum styles it, and are a crime against public interests. The directors also make concrete suggestions toward the satisfactory working of their institutes.

They first of all demand that only such nurses be employed as are prompted to their work by the earnest desire to give real help to the sick and all patients—not merely to put in eight hours. All sisters should be housed within the hospital, as is the case in all other civilized countries. They should be unmarried. If they marry, they may be employed in the outpatient department, in the laboratory or in private nursing, but not in the wards of surgical theaters. The medical staff, female or male, should be subject to the same restriction. As long as they work in the wards or clinics, they should be single and live in the hospital. Whole-time appointments should be the rule. The interests of the hospital require all the skill of the physician. The clerks and other members of the hospital may be appointed in such numbers that they complete their work in the normal eight hours; but they must actually work and not merely play politics. Of course, they cannot be denied the right to take advice in matters pertaining to their work, but it is an impossible condition that through the working board each man feels: "Nothing can happen to me, I cannot be dismissed." The consequence is that the efficiency of the work has suffered very severely. The memorandum demands that the directors should be entitled to dismiss without the assent of the board every person who does not fill the post he is in, and allot to him the work he is fit for. The arrangement of working boards is not suitable for public hospitals or humanitarian institutes, working not for profit. Their influence must be limited to advisory and disciplinary measures, but must not interfere with the effective working of the hospital, and the financial situation of all these institutes must be taken into consideration, without paying attention to political desiderata.

Holland Assists the Libraries of Austrian Scientific Institutes

An appeal for books and periodicals for our libraries has found a lively response in Holland these last few weeks. By the activity of Dr. Dykgraf, the ancient University of Leyden and the technical school of Delft have arranged collections of such works and publications as are mostly needed for our schools. The action will extend not only to books, but also to scientific material (glass tubes, chemicals and dyes) and to money contributions to enable the institutes to run for a while, at least on part time. Parts of these gifts have arrived already, and were distributed where they were most wanted. It may be added that the technical laboratory of our university, for instance, only just escaped being closed for want of material.

Contamination of the Milk Supply

The supply of milk to Vienna has for a long time been a matter of serious concern both to the board of health and to the board of nutrition. The quantity of 900,000 liters (about 220,000 gallons) required daily has not even approximately been reached for about four years. Milk tickets had to be handed out to infants and children up to 6 years, entitling them to from 0.25 to 1 liter daily, according to age, if the milk was obtainable. As a rule, only infants under 1 year get about 0.75 liter (a pint and a half), the other children getting about half this allotted quantity, or none at all, as luck might bring. Lately, even these reduced supplies were cut down still more, and a high percentage of the milk arrives in a sour condition, while a large quantity of the remainder has been pronounced contaminated by the inspecting officer. In fact, no ordinary cow's milk is now delivered to Vienna which is fit to be given to an infant. This is chiefly due to a curtailment of the railway traffic, owing to the lack of coal, and to the ill will of the peasant population, which refuses to send food to Vienna. Condensed milk has to be imported on a large scale from England, America and Switzerland to feed our children. But the exorbitant price, due to exchange rates, is a bar to the extended use of this substitute, as far as the great bulk of our population is concerned, while the fresh cow's milk arriving in antiquated vessels, and obtained by primitive methods, is not a reliable form at all.

Marriages

JOHN JONIKAITIS, Boston, to Miss Carolyn A. Eckes of Jersey City, N. J., in New York City, June 24.

FREDERICK WILLIAM FERGUSSON, Starkweather, N. D., to Miss Laura Jane Johnston of Chicago, June 2.

WARREN JAMES DUCKETT, Jersey City, N. J., to Miss Clara Belcher Hopkins of Dover, N. H., April 19.

FREDERICK HOWARD FALLS, Chicago, to Miss Margaret Haseltine of Berkeley, Calif., recently.

DANIEL SCHENK LEE, Guymon, Okla., to Miss Lillian Erline Willoughby of Liberal, Kan., May 11.

ERNEST WALTER TONKIN to Miss Florence Bertha Hicks, both of Edwardsburg, Mich., June 24.

SIMON HARRY ROSENTHAL, Lynchburg, Va., to Miss Bettye Greenberg of Danville, Va., June 6.

EDWARD HAGOP BEDROSSIAN to Miss Angele S. Adourian, both of Philadelphia, April 28.

JOHN PEARL GOODRICH to Miss Isabelle Esther O'Leary, both of Bangor, Me., June 26.

JULIUS ARKY HAIMAN to Miss Frances Alexander, both of New York City, June 20.

BENJAMIN BARKER BEESON to Miss Mildred Helen Bronson, both of Chicago, recently.

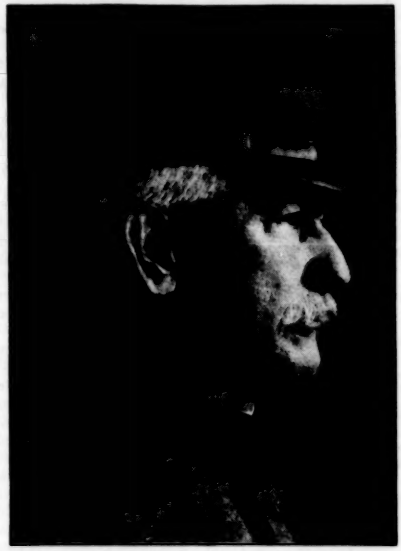
Deaths

Major-General William Crawford Gorgas ● former Surgeon-General of the United States Army and President of the American Medical Association in 1909-1910, died in London, July 4. Early in May, General Gorgas left the United States for the west coast of Africa, to head a sanitary commission of the Rockefeller Foundation, arriving in London, May 19. He proceeded to Brussels, where he was decorated by King Albert, and after a tour of Belgium and of the Rhine district around Coblenz, he returned to London. Here he suffered an attack of cerebral hemorrhage on the morning of May 30, since which day he had been critically ill at Queen Alexandra Hospital, where he was attended by Brig.-Gen. Robert E. Noble, U. S. Army, and by medical officers of the British Army. Full military honors were accorded to him at his funeral, July 9, at St. Paul's Cathedral, London, which was attended by representatives of King George and of the government services, and by members of the medical profession and the scientific world. His body will be returned to the United States in a government transport.

William Crawford Gorgas, the son of Gen. Josiah and Amelia Gayle Gorgas, was born at Mobile, Ala., Oct. 3, 1854. In 1875 he graduated A.B. from the University of the South, after which he studied medicine at Bellevue Hospital Medical School, receiving his M.D. degree in 1879. He served an internship at the Bellevue Hospital and then entered the Army as surgeon with the grade of lieutenant, June 16, 1880. His first service was at Fort Brown, Texas, where he contracted yellow fever, a circumstance which influenced and guided the future career of the young physician. Under military occupation of Cuba from 1898 to 1902, Dr. Gorgas served as health officer of Havana, which had a long history of endemic yellow fever with periodic outbreaks in epidemic form. When, late in 1900, the Army yellow fever board under direction of Major Walter Reed discovered the causative relation of the stegomyia mosquito to the transmission of yellow fever, Major Gorgas immediately directed practical measures of control based on that discovery, with the result that by the end of 1901, Havana and its environs were free from the disease for the first time in centuries. In recognition of this brilliant achievement in preventive medicine, Dr. Gorgas was promoted in 1903 to colonel and assistant surgeon-general by special act of Congress; in 1904, as chief sanitary officer of the Panama Canal, and later as member of the Isthmian Canal Commission, he directed the intensive sanitary campaign which transformed a veritable "pesthole of the Pacific" into habitable domain and made possible this triumph of American engineering without the great sacrifice of life which had doomed all earlier attempts to failure. He was nominated surgeon-general, Jan. 16, 1914, with the rank of brigadier-general, and by special act of Congress in 1915, he was created major-general for life in reward for his scientific attainments in the sanitation of the Canal Zone. He served as surgeon-general virtually throughout the World War, and reached the statutory age limit, Oct. 3, 1918, only a few weeks before the signing of the armistice, but continued on special duty until the end of hostilities.

General Gorgas was in international request as an authority on hygiene and sanitation and repeatedly advised foreign governments regarding special medical problems. At the invitation of the British government he went to South Africa in 1913, and there made important recommendations for the prevention and control of pneumonia among the miners. In 1915, he headed a commission under the auspices of the Rockefeller Foundation to study the foci of yellow fever and other tropical diseases in South America and Central America. He made further investigations in Ecuador after the war.

In recognition of his services to humanity and his contributions to science, he was the recipient of marked honors from the governments, universities and learned societies of many countries. He was awarded the Distinguished Service Medal of the United States and was made commander of the Legion of Honor of France; he was knighted by King George of England and decorated by King Albert of Belgium, as well as by rulers of other foreign countries. Honorary degrees were conferred on him by the University of Pennsylvania, University of the South, by Harvard, Brown, Alabama, Tulane, Johns Hopkins, Oxford, Lima and other universities. He was awarded the Mary Kingsley medal from Liverpool School of Tropical Medicine (1907), a gold medal of the American Museum of Safety (1914) and a special medal from the American Medical Association (1914). Besides being President of the American Medical Association in 1909-1910, he was a member of the American Society of Tropical Medicine, American Public Health Association, and Association of Military Surgeons; honorary fellow of the New York Academy of Medicine, and of the College of Physicians of Philadelphia, and associate member of the Société de pathologie exotique de Paris.



WILLIAM CRAWFORD GORGAS, 1854-1920

Frank Edwin Brown, Brooklyn; Columbia University, College of Physicians and Surgeons, New York, 1903; aged 40; captain, M. R. C., U. S. Army, with service in France with Base Hospital 62 at Marsur-Allier and in the St. Mihiel and Argonne offensives, and discharged May 14, 1919; a specialist in surgery; a member of the Medical Society of the State of New York; a member of the attending staff of the Methodist Episcopal Hospital, Brooklyn; died in that institution, June 23, after a surgical operation.

Finley Ellingwood, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1878; aged 68; professor of chemistry from 1884 to 1900, and of materia medica and therapeutics from 1900 to 1907 in his alma mater; editor of the *Chicago Medical Times* from 1884 to 1906; author of several textbooks on eclectic materia medica and therapeutics; died at Pasadena, Calif., June 29.

Charles Daniel McCarthy, Malden, Mass.; University of the City of New York, 1882; aged 59; a member of the Massachusetts Medical Society and once president of the Malden Medical Society; one of the founders of and surgeon to the Malden Hospital, and at one time mayor of the city; died, June 22, from cerebral hemorrhage.

M. H. E. Whitesides, Timpson, Texas; Memphis Tenn., Hospital Medical College, 1888; aged 62; once president of the Shelby County Medical Society; for eight years chief surgeon of the Houston East and West Texas, and Texas and Gulf railways; appointed a member of the State Board of Health in 1909; died, June 10.

George Edwin Davenport, Vancouver, B. C.; University of Vermont, Burlington, 1889; aged 57; formerly surgeon of the Colorado Midland Railroad; a member of the International Association of Railroad Surgeons; for several terms a mem-

● Indicates "Fellow" of the American Medical Association.

ber of the New Hampshire state legislature; died, May 31, from heart disease.

James Robert Sanford, Covington, Tenn.; University of Nashville, Tenn., 1857; Jefferson Medical College, 1857; aged 88; assistant surgeon of the Seventh Tennessee Cavalry, C. S. A., during the Civil War; for several years president of the Tipton County Poard of Health; died, June 21.

Frederick W. Rogers, Hartford, Wis.; College of Physicians and Surgeons, Chicago, 1889; aged 57; for more than fifteen years health officer of Hartford, and local surgeon for the Chicago, Milwaukee and St. Paul System; died, June 15, from cerebral hemorrhage.

Benjamin I. Berman, Norfolk, Va.; Medical College of Virginia, Richmond, 1909; aged 46; a member of the Medical Society of Virginia; while crossing a street, June 16, was struck by a motorcycle, and died from his injuries fifteen minutes later.

Claude Humphrey Addleman, Indianapolis; Indiana University, Bloomington and Indianapolis, 1920; aged 26; an intern in the City Hospital, Indianapolis; died in that institution, June 16, from septicemia a week after a surgical operation.

George F. Cline, Columbus, Ind.; University of Louisville, Ky., 1893; aged 56; a member of the Indiana State Medical Association; coroner of Bartholomew County; died in the Southeastern Indiana Hospital, Craigmont, from arteriosclerosis.

John Lyon, Greenwood, S. C.; Medical College of the State of South Carolina, Charleston, 1900; aged 46; a member of the South Carolina Medical Association; for several years a member of the State Board of Medical Examiners; died, June 21.

Oliver P. Hopping, Mt. Pulaski, Ill.; Illinois Medical College, Chicago, 1896; Missouri Medical College, St. Louis, 1897; aged 50; died at St. Johns Hospital, Springfield, Ill., June 11, from pneumonia following influenza.

William Preston Snyder, Kimberton, Pa.; University of Pennsylvania, Philadelphia, 1873; aged 63; formerly auditor general of Pennsylvania; state senator, and representative; died, June 20, from cerebral hemorrhage.

Rufus Walter Athey ● Marietta, Ohio; University of Wooster, Cleveland, Ohio, 1890; aged 55; died in Tremont Hospital, Marietta, June 5, from hypostatic pneumonia, eleven days after an operation for appendicitis.

John Menzer Ward, Manchester, Tenn.; Medical College of Indiana, Indianapolis, 1882; Rush Medical College, 1893; a member of the Tennessee State Medical Association; died, June 9, from cerebral hemorrhage.

Lawrence D. Neary, Torrington, Conn.; Georgetown University, Washington, D. C., 1913; aged 32; a member of the Connecticut State Medical Society; died at the home of his father in Waterbury, June 1.

Carey Lee Lamborn, Philadelphia; formerly of Penns Grove, N. J.; University of Pennsylvania, Philadelphia, 1896; aged 49; a member of the Medical Society of New Jersey; died, June 24.

Andrew Jackson Davis, Charleston, Iowa (license, Iowa, years of practice, 1886); aged 75; a practitioner for forty-five years; died at the home of his daughter in Keokuk, Iowa, June 15.

John Christopher Mitchell, Brockville, Ont.; Trinity Medical College, Toronto, 1875; for ten years superintendent of the Ontario Hospital for the Insane, Brockville; died, May 2.

John P. Paxton, Paterson, N. J.; Long Island College Hospital, Brooklyn, 1872; aged 69; a member of the Medical Society of New Jersey; died, June 16, from heart disease.

Otis H. Deck, Herkimer, N. Y.; Albany (N. Y.) Medical College, 1894; aged 56; a member of the Medical Society of the State of New York; died, June 13, from heart disease.

R. M. Henderson, Wake, Ark.; license, State Medical Board, Arkansas, 1903; aged 82; for forty-three years a practitioner of Baxter County; died, June 18, from senile debility.

Hiram J. Hampton, Tampa, Fla.; Georgia Eclectic Medical College, Atlanta, 1879; aged 68; formerly secretary of the eclectic board of examiners of Florida; died, June 7.

Thomas F. Wurtsbaugh, Richwood, Ohio; Eclectic Medical Institute, Cincinnati, 1886; aged 75; a veteran of the Civil War; died, June 19, from pulmonary tuberculosis.

Clayton C. Quillian, San Antonio, Texas; Atlanta, Ga., Medical College, 1886; aged 61; a member of the State Medical Association of Texas; died, June 18.

Correspondence

"THE IMMEDIATE STERILIZATION AND CLOSURE OF CHRONIC INFECTED WOUNDS"

To the Editor:—Dr. Hyman's letter (THE JOURNAL, June 12, 1920, p. 1663) concerning the dangers attendant on the method of closing chronic infected wounds published in THE JOURNAL, May 8, illustrates the serious error into which one may fall who does not read carefully. If one after ample opportunity to observe the method in use at Fort McPherson can comment as does Dr. Hyman in his letter, it shows that even the simple concept expressed in the title of the article has not been grasped, and an explanation for those who may not carefully note the directions and warnings given of necessity with brevity in the original article is offered. For efficient sterilization a powerful, penetrating caustic, zinc chlorid, is used, the safety in the use of which depends, first, on the surgeon's ability to prevent its entering the blood stream during its application and, secondly, on the prompt operative excision of all tissues impregnated with the caustic. Our experiments, of which Dr. Hyman quotes only the control, show that zinc chlorid is rapidly converted by the blood into a nontoxic compound. Thus, while a fraction of a drop of a saturated solution of zinc chlorid rapidly injected into the marginal ear vein of a rabbit is instantly fatal, a drop of this caustic held in the ear veins three minutes by compressing the base of the ear produces no systemic effect. Likewise, the temporary use of a tourniquet protects in the dog when several minims of the saturated solution are injected into the saphenous vein. In human practice no systemic symptoms have been observed when a tourniquet has prevented the entrance of blood from the injected area into the body during and for five minutes after the injection. For regions that cannot be guarded by a tourniquet, the zinc should never be applied by forcible injection but by packing all sinuses with cotton pledgets wrung out of the solution. Having introduced the caustic, especially if in the region of important structures, the surgeon is morally obliged to excise promptly all the chlorided tissue. Dr. Hyman's reference to frequent hemorrhages after the use of this method is based on two cases in which operation was performed in my absence that well illustrate what is not the method and what the surgeon should not do. In the first case, a sinus from the femur, there was inadequate exposure of the bone and an incomplete excision. A jagged edge of femur was left against the exposed femoral artery and the wound filled with Dakin tubes. After about ten days of Carrel-Dakin treatment, recurrent hemorrhages requiring ligation occurred and finally resulted fatally. In the second case, a perforating sinus of the femur, the external half of the sinus was properly treated by sterilization, excision and suture, but the important inner half of the sinus close to the femoral artery was drained and the chlorided tissue not excised. As would be expected, the corrosion progressed to violent hemorrhage on the third day, and partial gangrene of the foot followed a ligation of the femoral artery. That we had no case of secondary hemorrhage or paralysis in our series of about 350 cases treated by the method is due to the fact that thorough excision and immediate suture were considered the most important parts of the operation. One need not hesitate to treat sinuses adjacent to a large vessel if he has the skill to excise them properly. The danger of the method lies far less in the zinc chlorid than in the timidity and incompetence of the surgeon; and even one clumsy enough to cut a hole into the femoral artery, as I did in one case, may escape ill results if he does an immediate arterial suture and carefully surrounds

the artery with living muscle. To excise timidly and incompletely, to drain or to "Dakinize" is contrary to the technic and is to invite danger and failure. The skin may be left open to avoid tension, but the deep tissues must be well opposed. The method was by far the most efficient treatment for chronic infected wounds that was tried at Fort McPherson; and at the Army Hospital at Fox Hills while the method was temporarily abandoned until the need of a tourniquet was appreciated, the wounded soldiers themselves requested that it be resumed, and Capt. Donald Cragin reports very satisfactory results in about ninety cases. Only with the exodus of the reserve officers experienced in this method to civilian practice, and entirely against the desire of the commanding officers, was this treatment discontinued at Fort McPherson.

W. WAYNE BABCOCK, M.D., Philadelphia.

PRESENTATION OF CRAMPTON BLOOD PTOSIS TEST IN 1904

To the Editor:—In the article on "A Cardiovascular Rating as a Measure of Physical Fatigue and Efficiency," by Major Schneider (THE JOURNAL, May 29, 1920, p. 1507), reference is made to my "blood ptosis test" as being presented first in 1913 with two other tests. This is in error. My test was first presented at the Olympic Congress in St. Louis, in 1904. It was published in the *American Physical Education Review* in 1905-1906 in an extended article on "Recent Investigations in Sciences Underlying Physical Education." It was then published in the *New York Medical News*, Sept. 16, 1905. The error is no doubt merely an inadvertence. Its correction, however, is important and I would be grateful if you would be good enough to print this statement.

C. WARD CRAMPTON, M. D., Battle Creek, Mich.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MODES OF CONVEYANCE OF SCARLET FEVER

To the Editor:—In Anders' Practice of Medicine, Edition 13, p. 198, speaking of the modes of conveyance of scarlet fever, the statement is made that "the disease may also be transferred by persons who have been in the sickroom, while they themselves escape." Outside of the possibility of harboring the germ in the mouth, nose or throat, in what manner could the disease be transferred? Again, the statement is made that "it is also communicated by fomites, and the poison of scarlatina contained in the clothing retains its infective power for months," and "any objects (furniture, books, utensils, toys, etc.) which the patient has handled may serve to communicate the poison"; and again, "the infection may be air-borne, though not for any great distance." Are the foregoing statements supported by the weight of authority today? Aside from the conveyance by direct contact with the infected patients when they sneeze, cough or expectorate, or from drinking glasses or eating utensils, is there a single reliable instance in which the germ of scarlet fever has been carried by fomites or in the clothing, and in this way spread and communicated? How could there be communication on account of the patient's handling furniture, books or toys? Has any one ever obtained a culture from the desquamation scales? What proof is there that it is an air-borne disease, even for a short distance, unless one is in close proximity to the infected patient and comes in contact with the sputum or droplets from the mouth or nasal secretions? Finally, if all that is necessary is individual quarantine and isolation of the patient, why enforce a rigid household quarantine and follow by the useless formaldehyd fumigation when recovery has taken place?

HENRY FARRELL, M.D., Kearney, Neb.

ANSWER.—The general conception of the mode of conveyance of scarlet fever assumes that the essential cause of the disease is present in the secretions from the throat, nose, ears, etc.

If this assumption is true, then anything which is contaminated by such secretions and mechanically carries them may serve to spread the disease. Such carriers include a large number of animate and inanimate agents, such as hands, eating and drinking utensils, clothing, toys, foods and air. In the absence of strong currents, air will carry moist particles only a short distance before they fall to the ground from their own weight. Foods may not only mechanically carry the scarlet fever virus, but also furnish conditions in which it will multiply. It is generally thought that the essential cause of scarlet fever remains alive and virulent after drying, and that this may be true for a long time if the disinfecting action of light is excluded. In this way have been explained apparently well-authenticated instances of scarlet fever transferred by toys, clothing, etc., even after a long time.

Since the cause of scarlet fever has not been identified, cultures from desquamation scales, etc., would add no information of value. For the same reason it is impossible to speak of the mode of spread of scarlet fever with the same accuracy and assurance as can be done with diphtheria and typhoid fever.

If personal isolation is efficiently accomplished, there is little apparent reason for household quarantine. There has been a disposition among hygienists in recent years to substitute for formaldehyd fumigation, which is often of doubtful value, thorough airing and sunning, and the liberal use of soap and water.

THE NATURE OF MEDICAL PRACTICE ACTS

To the Editor:—Why are osteopathy and chiropractic allowed to be practiced, if they have no scientific basis?
Please omit my name and address.

A. R.

ANSWER.—The regulation of occupations, professions and trades by the state comes under what is known as the police power of the state. This is the right of the state to restrict and regulate the acts of its citizens for the public good. Medical practice acts are not for the benefit of the medical profession or for its protection against competition. It is not the business of the state to settle scientific questions regarding the relative value of different methods of treatment of disease. All the state can do for the protection of the public against ignorant and incompetent persons is to establish educational standards or qualifications, and to require all persons who desire to follow certain occupations, professions or trades to comply with those standards or qualifications. This is what the majority of laws do: so far as the medical profession is concerned they establish a standard for those who treat the sick, which standard requires certain educational and professional qualifications. Physicians comply with these requirements; they have to do so. But as the standard for physicians is too high for practitioners of certain cults—osteopaths, chiropractors, Christian Scientists, etc.—certain legislatures have passed laws exempting them. We are not able to answer our correspondent's question because we do not know why legislatures pass such contradictory legislation.

ARTIFICIAL RESPIRATION IN THE NEW-BORN

To the Editor:—Would you please let me know when was first described in the United States the method of artificial respiration for the new-born, apparently asphyxiated, which is known in France under the name of American or Dew's method, and mentioned by Professor Audebert in 1897 in the *Journal de médecine de Bordeaux?*

J. O. TOULOUSE, France.

ANSWER.—J. Harvie Dew described his method before the New York Academy of Medicine in 1893. His paper, "Establishing a New Method of Artificial Respiration in Asphyxia Neonatorum," was published in the *Transactions* of the New York Academy of Medicine, 1893, p. 80, and in the *Medical Record* **43**:289, 1893, and *Buffalo Medical and Surgical Journal* **33**:665, 1893. A Spanish translation was printed in *Anales de obstetricia, ginecopatia y pediatria* **14**:104, 1894.

REMOVAL OF MERCUROCHROME STAINS

To the Editor:—Please suggest some efficient remedy to remove mercurochrome stains from the clothing without injuring the cloth and color.

B. F., Rockford, Ill.

ANSWER.—Mercurochrome stains may be removed from the skin by rubbing first with 2 per cent. potassium permanganate solution and then with 2 per cent. oxalic acid solution (THE JOURNAL, Jan. 3, 1920, p. 31). This method might be tried for stains on cloth. As a preliminary, however, one should determine whether or not this treatment removes the color of the cloth itself. This is best done by applying the treatment to an "out of the way" piece of the cloth.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, July 13. Chairman, Dr. S. W. Welch, Montgomery.

CONNECTICUT: Hartford, July 13-14. Sec., Regular Board, Dr. Robert L. Rowley, 49 Pearl St., Hartford.

CONNECTICUT: Hartford, July 13-14. Sec., Regular Board, Dr. Robert Edwin Hair, 730 State St., Bridgeport. Sec. Homeo. Board, Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 13-15. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

INDIANA: Indianapolis, July 13-15. Sec., Dr. Wm. T. Gott, Crawfordsville.

MASSACHUSETTS: Boston, July 13-15. Sec., Dr. Walter P. Bowers, Room 144, State House, Boston.

NEW MEXICO: Santa Fe, July 12-13. Sec., Dr. R. E. McBride, Las Cruces.

OKLAHOMA: Oklahoma City, July 13-14. Sec., Dr. James M. Byrum, Mammoth Bldg., Shawnee.

SOUTH DAKOTA: Deadwood, July 13. Sec., Dr. Park B. Jenkins, Waubay.

WEST VIRGINIA: Charleston, July 13. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

Colorado April Examination

Dr. David A. Strickler, secretary, Colorado State Board of Medical Examiners, reports the written examination, held at Denver, April 6, 1920. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 23 candidates who took the physician's and surgeon's examination, 10, including 7 osteopaths, passed, and 13, including 2 osteopaths and 1 undergraduate, failed. Fifteen candidates were licensed by reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Yale College	(1875)	75
Kansas City College of Medicine and Surgery	(1920)	78.1
Kansas City University of Phys. and Surgeons	(1919)	80
FAILED		
St. Louis College of Physicians and Surgeons	(1919)	71.2
Eclectic Medical Institute, Cincinnati	(1908)	36.2
Undergraduate		67.9

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Rush Medical College	(1902)	Michigan
University of Illinois	(1911)	Illinois
College of Physicians and Surgs., Keokuk	(1880)	Kansas
Indiana University School of Medicine	(1917)	Indiana
Harvard University	(1910)	Mass.
University of Missouri	(1903)	S. Dakota
St. Louis Medical College	(1889)	Missouri
Washington University Medical School	(1919)	Missouri
Hahnemann Medical Coll. and Hosp., Philadelphia	(1903)	Kansas
Jefferson Medical College of Philadelphia	(1915)	Penna.
Women's Medical College of Pennsylvania	(1915)	Penna.
University College of Medicine, Richmond	(1913)	W. Virginia
University of Vermont	(1914)	Connecticut
University of Naples	(1908)	France

District of Columbia April Examination

Dr. Edgar P. Copeland, secretary, District of Columbia, Board of Medical Supervisors, reports the oral and written examination held at Washington, April 13-15, 1920. The examination covered 16 subjects, and included 80 questions. An average of 75 per cent. was required to pass. Of the 12 candidates examined, 10 passed and 2 failed. Eight candidates were licensed by reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University	(1916) 78.4, (1917)	86.8
George Washington University	(1917)	78
Howard University	(1919) 81.9, 83.	83.4
Loyola University	(1918)	81.3
Medical College of Louisiana	(1905)	89.6
Johns Hopkins University	(1918)	84
Meharry Medical College	(1916)	76.4
FAILED		
Coll. of Med. and Surg. (Physio-Medical), Chicago	(1911)	68.1
Columbus Medical College	(1884)	56.3

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Tulane University	(1916)	Louisiana
University of Maryland	(1915) (1916)	Maryland
University of Pennsylvania	(1912)	Penna.
Vanderbilt University	(1910)	Tennessee
Medical College of Virginia	(1914)	Virginia
University College of Medicine, Richmond	(1912)	Maryland
University of Virginia	(1891)	Maryland

Book Notices

THE PRINCIPLES OF ANATOMY AS SEEN IN THE HAND. By Frederic Wood Jones, D.Sc., M.B., B.S., Professor of Anatomy in the University of Adelaide. Cloth. Price, $5 net. Pp. 325 with 125 illustrations. Philadelphia: P. Blakiston's Son & Co., 1920.

Frederic Wood Jones is a scientific anatomist whose previous work shows that he desires not only knowledge but also understanding. He says: "In the study of the hand we are immediately brought face to face with some of the most important biologic problems and some of the most striking exhibitions of general principles. It is for this reason that the hand has been selected as a limited and self-contained study from which the student may learn more of principles and less of details than is usual in complete textbooks of anatomy." The book may be commended to those who, earnest in the cause of medical education, see the fundamental sciences only from the practical side, and who believe that teachers of anatomy should have the surgical point of view. Jones has seen "well taught but wholly unlearning students" who have been trained by such teachers, and he is sorry for them. By methods of patient drudgery and brute force of memorizing, they have learned many dead facts about the dead hand. But it is not a dead hand which the author invites the student to consider in this book. It is one full of character and life—of life which has been continuous from the beginning of life on the planet, and of character which has been slowly but clearly stamped on the living structures as we have traveled the long road of evolution. "Man's place in nature is largely writ upon his hand." The author considers whether these characters are new or were acquired long ago, far back along the road, and so became firmly impressed on the tissues; whether they are progressive or regressive, whether they are highly specialized in the human animal, or whether they are a part of the original heritage of the stock. No study of structure can be intelligent which is not also a study of function. The author considers the hand as a working part of a working organism. Its efficiency depends not only on its own structure but more on the capacity and control of its cooperation. "It is the lower animals which show the anatomical advance from a primitive condition which we retain; but as a cortically controlled structure the human hand affords striking evidence of man's superiority over all the other members of the mammalia. It is not the hand which is perfect, but the whole nervous mechanism by which movements of the hand are evoked, coordinated and controlled." In considering the mechanism of this control, Jones regards the tissues as living things; and their study is endowed by him with vital interest. Although the book is limited to the hand, the author has made a valuable contribution to the study of anatomy in general; for no student can study one organ as he will be led to study the hand through this book without developing habits of observation and of thinking; and these are permanent. General principles, if only they are seen, even in but one part, illuminate every other part and the mind of the student, so that the study of structure can never again be uninteresting drudgery, but will rather be a source of ever renewed interest, satisfaction and understanding.

THE PRACTITIONER'S MANUAL OF VENEREAL DISEASES, WITH MODERN METHODS OF DIAGNOSIS AND TREATMENT. By A. C. Magian, M.D., Ancien Elève de l'Hôpital St. Louis, Paris. Cloth. Price, $3. St. Louis: C. V. Mosby Company, 1919.

The author states that this book was written only for the general practitioner; but he indulges in lengthy excursions into the history of syphilis and gonorrhea, and furnishes in another chapter an elaborate description of the technic of the Wassermann test. Inaccuracy in using medical terms and in describing pathologic processes is frequent throughout the text. He says: "Sloughing and gangrene may follow." One might suggest that sloughing is the consequence of gangrene. The author overlooks the important differentiation between incontinence and frequency of desire for urination. The views of the author with regard to pathology are illustrated by the statement that continuous straining may cause abscess

and fistula. Inflammation of the testicles is defined in parenthesis as gonorrheal epididymitis, and this is followed by the remark that the affected testicle swells rapidly. That in treatment of acute anterior urethritis the author recommends the forcing of permanganate solution, administered by percolator irrigation, through the urethra into the bladder, will cause many a urologist to raise his eyebrows. To mention packing of the urethra with medicated gauze in the treatment of gonorrheal urethritis is unnecessary, to say the least. In the chapter on treating syphilis, the author enumerates sixty different drugs, every one of them obsolete as to use, after having cautioned the reader to purge his library of all but the most modern textbooks and pamphlets on syphilis. It may be doubted whether subcutaneous and intramuscular injections of neo-arsphenamin may be given without any risk, as the author asserts. Such immature attempts at hurriedly writing a medical book cannot be too severely criticized.

VENEREAL DISEASE: ITS PREVENTION, SYMPTOMS AND TREATMENT. By Hugh Wansley Bayley, M.C. Cloth. Price, $4.25 net. Pp. 152, with 54 illustrations. Philadelphia: P. Blakiston's Son & Co., 1920.

Another attempt to cover the prevention, symptomatology and treatment of the venereal diseases in a book of 146 pages, and—another failure. The only chapters that come up to the standard of such a publication are the one on Legislation and Prophylaxis and one on Instructions on Conducting a Venereal Clinic. Only colored pictures may be expected to be instructive in the diagnosis of syphilis, but the crudeness of the black and white plates presented destroys even the limited claim to usefulness that noncolored illustrations may have. It is surprising to have a supposedly professional pathologist tell us that a urethral discharge may be caused by gout or rheumatism, and to have him use the term "tubercular" intead of "tuberculous" epididymitis, or have him divide the symptoms of intolerance to arsenic compounds into vasomotor and toxic symptoms. In the treatment of syphilis he does not mention the use of intravenous injections of mercury, so useful in nervous and eye complications. Epididymotomy does not find a place in the chapters on gonorrhea and its complications, and the author fails to call attention to the importance of early operation for prostatic abscess. The Guyon capillary catheter also seems to be unknown to the author. A plate meant to illustrate the microscopic appearance of a gonorrheal smear taxes to the utmost the imagination of the reader. The comic relief in the tragedy of gonorrhea is furnished when the author, in discussing latent gonorrhea, reminds us that "criminals who are wanted by the police do not frequent the main thoroughfare, but frequent the sidestreets and alleys; so the gonococcus may lurk unsuspected in ducts and glands that surround the urethra along its whole length." Teaching is an art, and writing a medical textbook calls for more thorough preparation and more concentrated application to the work than is manifested in this publication.

UEBER HÄMOPHILIE BEIM WEIBE. Kritische Studie nebst Erörterung der gynäkologischen Blutungen. Von Prof. Dr. C. Bucura. Paper. Price, 11.20 marks. Pp. 92. Vienna: Alfred Hölder, 1920.

The sum and substance of this monograph on hemophilia in the female is that there is no such thing as hemophilia in the female. An analysis of 197 cases reported as such in the literature leads the author to the conclusion that not one of these cases meets the requirements for establishing the existence of true hemophilia according to the strict definition of the disease. This conclusion is in harmony with the prevailing view that true hemophilia is a hereditary disease, transmitted from father to grandson through the daughter without the daughter, herself, exhibiting the disease. Cases of excessive tendency to hemorrhage in the female are always to be attributed to some other cause than true hereditary hemophilia, a point of importance in diagnosis and treatment. The author's investigations throw no new light on the etiology of hemophilia. He accepts the view that it must depend on an inherited chemical abnormality of the protoplasm of the formed elements of the blood and of the vessel walls. Possibly lack of thrombokinase in the blood platelets is an important factor, although there is no general deficiency in the thrombokinase.

Medicolegal

Illegal Quarantine to Examine for Venereal Disease

(Ex parte Dillon et al. (Calif.), 186 Pac. R. 170)

The District Court of Appeal of California, Second District, Division 1, in ordering that these petitioners for a writ of habeas corpus be discharged from the custody of the chief of police of Los Angeles, says that they were arrested, without a warrant, for the alleged violation of a city ordinance which made it unlawful for any person to resort to any rooming house, lodging house, hotel or other place in the city, for the purpose of having therein sexual intercourse with a person to whom he or she was not married; and they were held in a sort of quarantine. It appeared that whenever persons arrested for violating this ordinance were brought to the city jail they were, by the chief of police, held without bail and under a pretended quarantine by reason of a general instruction given by the health department of the city, and without any knowledge being had on the part of the health department or its inspectors which would give rise to reasonable cause, or suspicion, that the persons so detained were afflicted with contagious or infectious venereal disease. It was stated that for two years or more it had been the practice of the health department to examine all persons brought to the city jail charged with the violation of the ordinance, or charged with any other offense involving sexual immoralities or lewdness, to determine the freedom of such persons from contagious and infectious quarantinable venereal disease; that about 1,000 persons had been examined within such time; and that about 90 per cent. of the women so arrested and charged were found to be afflicted with contagious and infectious venereal disease in some form.

The right of the health authorities to subject the person of an individual afflicted with contagious disease to quarantine restraint is an extreme measure, recognized as being necessary in cases of epidemics and instances in which such detention is necessary to protect properly the public health. Sick persons who are subjected to such quarantine are not deemed to be criminals, and are to be treated with every consideration and afforded conveniences reasonably procurable under the circumstances.

The court assumes, for the purposes of this case, that the arrest was legally made. It may be assumed, too, that under the laws relating to the public health, inspection and quarantine may be made of persons, animals and property by the duly constituted health authorities, when it is known, or appears on reasonable ground, that the person so subjected to inspection or quarantine is afflicted with contagious or infectious diseases, such as are enumerated in Section 2979a of the Political Code. But the question here was whether the health department might reasonably assume, without any previous knowledge, information or report as to the individual concerned, that every person arrested by officers and booked at the city jail as having violated the rooming house ordinance was reasonably likely to be afflicted with a quarantinable venereal disease. Virtually the health officers, through their orders to the chief of police, said to the individual:

> We don't know whether you are guilty of this offense or not; if you were guilty we think it would furnish reason to suspect that you are afflicted with a venereal disease; but, whether guilty or innocent, you have been arrested, and you must remain confined without bail and without being permitted communicaton with the outside world, except with our consent, until you have submitted to a private examination and convinced us that you are free from the taint of disease

The bare statement of this proposition, considered in view of all the safeguards which have been thrown around the liberty of the individual, is shocking to our sense of justice. When sufficient cause exists to believe that a person is afflicted with a quarantinable disease, there is no doubt of the right of the health authorities to examine into the case and, in a proper way, determine the fact. Such preliminary investigation must be made without delay, and, if quarantining is found to be justifiable, only such quarantine measures

may be resorted to as are reasonably necessary to protect the public health, it being remembered that the persons so affected are to be treated as patients, and not as criminals.

Recovery for Services Not Supported by Evidence

(Huntley v. Geyer (N. D.), 175 N. W. R. 619)

The Supreme Court of North Dakota reverses a judgment that was obtained by the plaintiff for services, and remands the case for a new trial, because improper evidence was admitted and necessary evidence was lacking. The court says that it appeared from the evidence that the professional services for which the plaintiff, a physician and surgeon, sought to recover were rendered in the treatment of one Walter Geyer, a son of the defendant. At the time the services were rendered, Walter Geyer was about 24 years of age. He was making his home with his parents, but was operating an adjoining farm for himself. The plaintiff testified that about a certain date one of Walter Geyer's brothers came to the plaintiff's office and informed the plaintiff of Walter's illness, and obtained some medicine for him. The plaintiff further testified that at that time the brother stated that he had been sent by the defendant to consult the plaintiff with regard to Walter's illness. This testimony was admitted over the objection that there was no showing that the son who called on the plaintiff had been authorized by the defendant to do so, and that the alleged statements were hearsay as to the defendant and inadmissible. The objection was overruled and the evidence admitted, but the supreme court is of the opinion that it was error to permit the plaintiff to testify to the statements which he claimed the defendant's son made at the time he called the plaintiff to treat Walter Geyer. The defendant denied that he had sent the son, or had in any manner requested or authorized the calling of the plaintiff. The plaintiff made no showing whatever that the son had actually been sent by the defendant. Clearly the plaintiff's testimony as to what the son said would not be admissible to prove that the defendant had sent him. It was purely hearsay. And in view of the condition of the evidence in the case the court is not prepared to say that the admission of the evidence did not affect the result.

The defendant contended also that there was no evidence tending to show either that the compensation of the plaintiff had been agreed on, or that his services were reasonably worth the amount awarded; and the court believes that this contention was well founded. There was no evidence tending to show that the amount of the plaintiff's compensation was fixed by agreement. Nor did the plaintiff or any one else testify that the services rendered by the plaintiff were reasonably worth the amount for which the plaintiff recovered judgment or any other amount. The plaintiff contented himself by stating what he had done, and identifying certain charges he had made on his books therefor. Nowhere did he testify that the services were reasonably worth what he charged for them. In the absence of an express agreement as to amount, the law implies a promise to pay for a physician's services as much as they are reasonably and ordinarily worth on the professional market. When a physician seeks to recover for such services, he has the burden of proving their value.

May Testify to Making Examination but Not as to Result

(Livingston v. Omaha & C. B. St. Ry. Co. (Neb.), 175 N. W. R. 662)

The Supreme Court of Nebraska says that in this personal injury case, in the direct examination, with respect to her physical condition before the accident, the plaintiff testified that she never had any venereal disease or taint, nor had she taken any treatment for any ailment of that sort. The examining physician for the juvenile court testified that it was her duty to examine those coming under its care; that in her official capacity she examined the plaintiff in 1911, when she was brought by the juvenile authorities to her for that purpose, and that from the examination she reached a conclusion as to the plaintiff's condition at that time; that in 1912 the plaintiff came voluntarily and received treatment. On objection by the plaintiff, the witness was not permitted to testify respecting the plaintiff's condition in 1911, nor as to whether she discovered anything abnormal in her condition in 1912. Another physician, who was called by the defendant, was permitted, over objection, to testify that the plaintiff had called on him for an examination before her marriage and before the accident. But he was not permitted to answer the question as to for what purpose, or to determine for what that examination was made. The supreme court sees no error in this. It holds that when a plaintiff offers testimony in chief tending to prove freedom from venereal disease, it is competent for the defendant to offer testimony tending to show that the plaintiff called on and was examined by a physician, but such physician cannot testify as to the result of his examination.

Cutting Hole in Bladder—Skill and Care Required

(Krinard v. Westerman (Mo.), 216 S. W. R. 938)

The Supreme Court of Missouri, Division No. 1, in affirming a judgment for $15,000 damages in favor of the plaintiff, says that it was alleged that the plaintiff, being troubled with a fibroid tumor of the uterus, went to the defendant for an operation for its removal, he having represented to her that he was specially skilled in the performance of such operations, having performed 500 operations of like character. The alleged negligent acts on which the case was submitted to the jury were that, in performing the operation, the defendant negligently and unskilfully cut a hole in the plaintiff's bladder; and that, either during the operation or during one of the operations thereafter performed by him, he so cut or tied off the plaintiff's left ureter as to cause it entirely to lose its functions and to atrophy, and to cause the plaintiff's left kidney also to lose its functions and to atrophy. The defendant admitted that he cut the hole in the plaintiff's bladder, but averred that it was not negligently done, but that it became necessary for him to make such cut in removing the tumor. He also admitted having performed two subsequent operations for the purpose of closing the hole, but averred that they were unsuccessful for the reason that the parts were diseased.

Negligence may be inferred from the facts. If the legitimate inferences which may be drawn from the facts establish negligence, the case of negligence is made. To a woman friend that was in the operating room at the solicitation of the plaintiff, the defendant said: "That is a perfect operation, perfectly successful." Not a word was said about cutting the bladder. Nor did the defendant tell the plaintiff about it for a month, during which time he was telling her and her friends that she was getting along nicely. Then, when the plaintiff complained about the constant flow of urine, and told him that she believed he had injured her bladder, he said that he had cut the bladder and taken out the diseased portion, and there would have to be a second operation. Moreover, when the necessity arose for a third operation, and the plaintiff wanted an eminent physician called in to assist, the defendant became enraged and used some rather forceful language, with the result that the operation was performed without the presence of the other physician. The very conduct of the defendant tended to show guilt. Besides all this, the plaintiff was examined both before and after these operations by different physicians, and none of these found any evidence of a cancerous or diseased condition, nor did the surgeons who afterward operated three times to get the cut closed. The evidence also showed that the cutting or tying of the ureter would kill the kidney, and it tended to show that the plaintiff had been normal in all these parts, but now there was no life in the left kidney. A fair inference from these facts would indicate that the defendant had destroyed the left ureter in one of his operations. There was no error in submitting the case to the jury by the overruling of the defendant's demurrer to the evidence of the plaintiff.

Nor was there error in an instruction which told the jury that the defendant as a surgeon, having undertaken to operate on the plaintiff and remove a fibroid tumor and the uterus, "in performing this operation it became and was his duty to exercise reasonable skill and care, as an ordinarily skilful and careful surgeon is accustomed to exercise and use in

like surgical operations under like circumstances." It was contended that the instruction covered the whole world's physicians, while the defendant's efficiency should have been gaged by "the degree of skill possessed by reasonably skilful surgeons in the community in which he is practicing." But the court holds that that contention cannot be sustained. There should be no limiting to the local vicinity of the practitioner. The weight of authority is against that doctrine.

But, even if the instruction was technically wrong, this would not avail the defendant in this case. The plaintiff sued him as a specialist in this line of operations. The rule applicable to his case has been stated thus:

> A physician holding himself out as having special knowledge and skill in the treatment of particular diseases is bound to bring to the discharge of his duty to a patient employing him as such specialist, . . . that special degree of skill and knowledge possessed by physicians who are specialists in the treatment of such diseases, in the light of the present state of scientific knowledge.

Insufficient Indictment for Practicing Illegally

(People v. Devinny (N. Y.), 125 N. E. R. 543)

The Court of Appeals of New York, in reversing a judgment of conviction of the defendant of practicing medicine without a license, holds insufficient an indictment which accused the defendant "of the crime of practicing medicine without being registered and legally authorized (as required by Section 161 of the Public Health Law) committed as follows: The said . . . Devinny, on May 27, 1918, and for a considerable time immediately prior thereto, at Albany, in this county, unlawfully practiced medicine, he not being then registered and legally authorized" as in the statute required and provided. The court holds that the indictment was not defective because it did not negative all of the cases set forth in Section 173, enumerating cases not to be affected. The court says that in the case at bar if it should be held that an indictment must negative all of the cases referred to in the statute as not being unlawful, it would be drawn out to intolerable lengths; and even after that had been done, the burden doubtless would rest on the defendant of proving that he came within the excepted cases. But the court thinks that it was necessary for the present indictment to set forth one detail of the alleged offense, which in this particular case would very likely involve and lead to setting forth generally the details of the offense. It is abundantly established that in charging an offense committed on or in respect of an individual, as diagnosing, treating, or offering to diagnose or treat, a disease, it is necessary to name, or excuse naming by proper allegation, such individual. There is an exception to this general rule. When the crime consists of a series of acts continuous in their nature, such as carrying on a prohibited business, or keeping an unlawful resort, a general description, reasonably including and describing the series, will be sufficient. It is not necessary in such cases to set forth each act going to make up the offense. In the court's opinion, however, this indictment does not come within that exception. It does not seem to the court that the statute was intended to define or constitute the prohibited offense as consisting of a continuous series of acts amounting to the conduct of a business within the decisions referred to. It may be that if the court had nothing but Section 161 prohibiting the "practice" of medicine, and were relegated to the dictionary or common usage for a definition of that word, the court would be compelled to interpret it as meaning a continued and habitual performance of acts. But the court is not thus left to these means of reaching a definition. Section 160 defines what "practice" means. Its meaning is satisfied whenever and as often as an individual "holds himself out as being able to . . . and offers or undertakes to diagnose, treat," etc. Whenever within the fair meaning of those terms on a single occasion an offender has held himself out as able to and has offered to treat a patient there has been a completed offense, and it is not necessary to show that this operation has been repeated so many times that it has ripened into a habit or business. If this is the correct interpretation, there is no question that the individual operated on should have been named or proper excuse given for not naming him even within what has been said in cases applying the "business" rule.

Society Proceedings

COMING MEETINGS

Montana State Medical Association, Helena, July 14-15.

AMERICAN PEDIATRIC SOCIETY

Thirty-Second Annual Meeting, Held in Highland Park, Ill., May 31-June 2, 1920

The President, DR. THOMAS S. SOUTHWORTH, New York, in the Chair.

Segregation of Pneumonia

DR. THOMAS S. SOUTHWORTH, New York: Segregation of pneumonia patients may have been practiced by thoughtful physicians, but the idea has not found its way into the general medical conscience, nor has it been advised widely in our literature. Evidence of the infectiousness of pneumonia is not wanting. I have for years insisted, when possible, on the prompt isolation of the first case of pneumonia among children having measles, with a resulting limitation of the number of cases, and I have extended segregation to all the pneumonias. The obligation is imperative to anticipate the day, not far distant, when the movement to control the scourge of pneumonia may make the retention of such cases in the general ward as repugnant to our medical sense of propriety as the retention of an open case of pulmonary tuberculosis.

Studies on Blood Sugar: Effect of Blood on Picrate Solutions: Limitations of Lewis-Benedict Method

DRS. DAVID MURRAY COWIE and JOHN PURL PARSONS, Ann Arbor, Mich.: Blood contains substances other than sugar which induce a color change in the picrate solution employed in the modified Lewis-Benedict blood sugar method. Under normal conditions, these substances do not interfere with the established normal range for this method. Under pathologic conditions, several of these substances which showed the most marked influence were epinephrin, acetone and diacetic acid. Creatinin may interfere, but does so in a less marked degree if we consider the comparative nonsensitiveness of the picrate solution to these substances.

DISCUSSION

DR. OSCAR M. SCHLOSS, New York: It seems probable that under normal conditions it is an essentially accurate clinical method, though it has a moderate error such as is present in any colorimetric method. I have used the Lewis-Benedict method, and a control series in which the method of Bertrand was used. The Lewis-Benedict method gives results that are constantly higher, but the difference is consistent and does not influence the results of observations made in normal cases.

DR. DAVID MURRAY COWIE, Ann Arbor, Mich.: The effect of heat on picrate acid solutions has been a matter of discussion, and very different opinions are held. The experience of Addis and Benedict, as well as our own, is that the prolongation of the heat produces an increase in the intensity of the color. In regard to the acetone, we have not run tests beyond ten minutes, but up to that time a color change has been produced.

Epidemic Lethargic Encephalitis

DR. L. E. LA FÉTRA, New York: It is evident both from the difference in the lesions and from the results of animal experimentation that poliomyelitis and epidemic encephalitis are distinct diseases. I have not found that this disease follows influenza with sufficient regularity to warrant one in stating that it is caused by influenza, though influenza may predispose the patient to infection or increase the virulence of the prevalent virus. Of eleven children, four died. There was no relationship between any two of the patients, and they did not live in close proximity to each other. In only two was there any history of influenza. When the disease was well under way the outstanding features were lethargy, general weakness and ptosis or paralysis of the

ocular or facial muscles, with double vision in several instances. In the fatal cases the leukocyte count was higher than in the cases ending in recovery. The spinal pressure varied. In most cases globulin was present, with increase in the number of cells. The fluid was sterile on culture. Recovery took place very gradually. Two patients showed serious sequels, one imbecility and one spasticity and mental impairment. The disease has to be differentiated from tuberculous meningitis, poliomyelitis, cerebrospinal syphilis, brain tumor and meningism. The mortality of the disease is about the same as that of poliomyelitis. In how many damage to the brain may show later it is too soon to state.

DISCUSSION

Dr. Rowland G. Freeman, New York: According to accounts, the disease has invariably occurred after influenza and not after other conditions. Little is known with reference to the ultimate results of the disease; however, the outcome is not altogether favorable.

Dr. Henry Heiman, New York: It is sometimes impossible to differentiate between epidemic encephalitis and tuberculous meningitis if the tubercle bacillus cannot be found. Loewe and Strauss have shown that the disease can be diagnosed by animal inoculation. The eyes should be examined to detect the presence of choroid tubercles.

Dr. Charles Gilmore Kerley, New York: The symptom that has impressed me in this disease is the great variability of the symptomatology. Only one symptom is constant, and that is the high degree of stupor, which resembles opium narcosis.

Dr. John Howland, Baltimore: The disease is more common than is generally believed, and is difficult of recognition in its atypical forms on account of the relatively slight changes in the spinal fluid. Sequels may persist for a long time. We have had patients return on account of abnormal symptoms, particularly at night. Some have been apparently normal in the daytime, but at night exhibited an almost maniacal condition. This sleeplessness may last for weeks.

Dr. Alfred Hand, Philadelphia: One patient slept twenty hours out of twenty-four and showed double ptosis. Another patient had double ptosis of the eyelids, strabismus, and slight rigidity of the neck. Lumbar puncture revealed the spinal fluid under pressure. The fluid contained no tubercle bacilli, which excluded tuberculous meningitis.

Dr. Oscar M. Schloss, New York: Encephalitis occasionally complicates measles and scarlet fever. Last winter I saw two such cases. The symptomatology of so-called "encephalitis lethargica" is practically identical with the sporadic cases seen for some years.

Significance of Xanthochromia of the Cerebrospinal Fluid

Dr. Isaac A. Abt, Chicago: My patient was 37 days old at the time of death, and of eight months' gestation. Specimens of fluid contained red cells, increased globulin and increased cell count, most of the cells being polymorphonuclears. Necropsy revealed a fibrinous, hemorrhagic meningitis and encephalitis. There were subpial hemorrhages, marked internal hydrocephalus, subacute pyelitis and bronchopneumonia.

DISCUSSION

Dr. J. Milton Miller, Atlantic City, N. J.: This condition was present in a child 3 weeks old. The first and second lumbar punctures were negative. Ventricular puncture revealed a yellowish, gelatinous fluid not coagulated.

Acute Cerebrocerebellar Ataxia

Dr. J. P. Crozer Griffith, Philadelphia: This condition is not common, but it occurs more frequently than is ordinarily supposed—an acute hemorrhagic encephalitis involving the cerebellum, and which may be designated acute cerebellar encephalitis. There are always symptoms indicating an involvement of the large brain as well, and for these the title cerebrocerebellar encephalitis or cerebrocerebellar bulbar encephalitis is to be preferred. The degree to which the process involves one or another part of the brain varies. In the majority of cases some infectious disease has preceded the attack. The prognosis, so far as life is concerned, is good. The disease leaves no traces in the majority of instances. Lumbar puncture was performed in all my cases and was always negative.

Nature of Reducing Substance in Urine of Children Suffering from Nutritional Disorders

Dr. Oscar M. Schloss, New York: My experiments do not confirm the work of Langstein and Steinitz showing that this reducing substance is lactose or galactose. The only reducing substance which we have found constantly present in perceptible amounts has been glucose. There is usually a nonfermentable reducing substance similar to that found in normal urine. This may be lactose, but its amount is too small to identify it with certainty.

DISCUSSION

Dr. David Murray Cowie, Ann Arbor, Mich.: In these cases in which you did not find a reducing substance like glucose or lactose, did you run the acetone test?

Dr. Henry Heiman, New York: Was an attempt made to exclude glucose and then to test for pentose and galactose?

Dr. Oscar M. Schloss, New York: Acetone and creatinin would, of course, be present in the nonfermentable fraction. Both substances were excluded, the acetone by boiling and the creatinin by first precipitating with mercuric nitrate solution. If pentose was present, it could be present only in the nonfermentable fraction. The proportion was so small that it was difficult to determine its presence with any degree of certainty.

Relation of Bodily Mechanics to Cyclic Vomiting and Other Obscure Intestinal Conditions

Drs. Fritz B. Talbot and Lloyd T. Brown, Boston: Poor bodily mechanics are surprisingly prevalent among children and can easily be corrected by proper exercises or an abdominal support. Correcting the improper posture often corrects chronic constipation, and hastens the cure of recurrent vomiting and the cure of certain types of attacks of acute abdominal pain in children.

DISCUSSION

Dr. Charles Gilmore Kerley, New York: I have found practically the same things true, except that I have always attributed the faulty posture and distension of the abdomen primarily to a defect in the intestinal tract. A roentgen-ray study of these cases almost invariably reveals an elongated sigmoid. It is remarkable what an abdominal support will do for these patients. It seems to me it is the faulty structural condition rather than faulty mechanics that is the primary cause of the trouble.

Dr. Godfrey R. Pisek, New York: The use of the lead tape to show the changes in the curve of the back, chest and abdomen when the patient is in proper and improper posture is a great help in the correction of faulty posture.

Epidemic of Hemorrhagic Diarrhea Due to Streptococcus Mucosus

Dr. A. D. Blackader, Montreal, Canada: Of sixty-five cases the larger proportion were children under the age of 6 years. The attack began abruptly with high fever, nervous symptoms and vomiting, and diarrhea set in early. Mucus and blood appeared in the stools and the amount increased rapidly, until in the severe cases they seemed to form almost all of the stool. The attack lasted from a few days to twenty-one days. The presence of *Streptococcus mucosus* in the stools, associated with other streptococci and large numbers of colon bacilli, and the absence of any *Bacillus dysenteriae* indicated that the streptococcus must be regarded as the chief organism in the production of the epidemic. The milk supply seemed to be excluded as the source of the epidemic.

Phlyctenular Ophthalmia and Its Relation to Tuberculosis

Drs. Borden S. Veeder and T. C. Hempelmann, St. Louis: Of 196 children with phlyctenular disease, skin tuberculin tests were positive in more than 92 per cent. The results of the complement fixation tests for tuberculosis were strik-

ingly similar to those obtained in cases of proved tuberculosis. Tuberculous lesions involving other organs than the eye were definitely demonstrable in more than one half, and seemed probable in almost two thirds of the cases. Children observed over periods of one year or more showed an even greater proportion of tuberculous lesions, more than four fifths of this series giving such evidence. Cough, malnutrition and a history of exposure to other cases of tuberculosis were frequent.

DISCUSSION

DR. JOSEPH BRENNEMANN, Chicago: Dr. Gibson and I found a positive tuberculin test in 98 per cent. of the cases. We started our investigation thinking phlyctenular disease was not a tuberculous condition, and we left it convinced that it was either a manifestation or an accompaniment of tuberculosis. Finding this condition, however, is not sufficent ground for saying that a child has tuberculosis.

DR. HENRY J. GERSTENBERGER, Cleveland: Another factor that may have some relation to this condition is the exudative diathesis. If one takes a careful history of children with tuberculosis it will be found that many have eczema or intertrigo.

DR. FRITZ B. TALBOT, Boston: In a series of 100 cases of phlycenular disease, 21 per cent. showed signs of tuberculosis. In chronic cases of phlyctenular disease the von Pirquet tests were all positive, though many of the children showed no other signs of tuberculosis.

DR. T. C. HEMPELMANN: We obtained a very slight history of lesions attributable to exudative diathesis. Such statistics as we were able to obtain showed phlyctenular disease no more frequent in children having the exudative diathesis than in others. We employed old tuberculin in the treatment of these cases, starting with 0.000001 mg., and we have not been convinced that either local recovery or general improvement resulted.

Pneumonia in Infants and Children

DR. HENRY HEIMAN, New York: Of 336 cases of pneumonia in children, 288 were bronchopneumonias and forty-eight were lobar pneumonias. The mortality was 16.6 per cent. With the exception of the 2 to 5 year period, the mortality varied inversely with the age. A variety of organisms were found in the sputum, including the influenza bacillus, pneumococcus, streptococcus and staphylococcus, but none in sufficient predominence to justify conclusions. The most frequent complication was otitis media, which occurred in seventy-five of the 336 cases. Of prime importance in the treatment of pneumonia in children is hygienic care and efficient nursing. I would not recommend the general use of digitalis in children, since, as a rule, the pulse is not lowered or the blood pressure raised by this agent. The promiscuous use of dry cupping is to be condemned.

DISCUSSION

DR. ROWLAND G. FREEMAN, New York: There is no method of treating pneumonia so valuable as fresh air, and the colder the air the better the result. I have never seen cold air harm a patient with pneumonia, and I have seen it do a great deal of good. For many years I did not use digitalis in children, but recently I have been using it in large doses and have found it valuable, especially when given early to older children.

DR. A. D. BLACKADER, Montreal, Canada: Alcohol may be used with advantage in some cases. It should be used as a drug and the dose carefully regulated. Digitalis disturbs the stomach. Fresh air is desirable, but the line should de drawn at flowing air and drafts. Rest is most important, and for this reason hydrotherapy should be used with moderation.

DR. RICHARD M. SMITH, Boston: To conserve the outgo of energy it is a good plan to give codein.

DR. E. W. SAUNDERS, St. Louis: Potassium iodid is useful to loosen up a tenacious sputum that blocks the bronchial tubes, and is responsible for keeping the temperature higher than it otherwise would be.

DR. HENRY HEIMAN, New York: I am in favor of fresh air but not cold air; fresh air contains as much oxygen as cold air. In the application of hydrotherapy I never use a cold sponge; if cold water is not used, fear and shock are avoided. Potassium iodid does no good.

Relative Efficiency of Mercurial Preparations in Treatment of Congenital Syphilis

DRS. WALTER R. RAMSEY and O. A. GROEBNER, St. Paul: Mercurial ointment, 50 per cent., is to be preferred to the less concentrated preparations, and should be repeated not more often than twice weekly instead of daily. Calomel ointment is absorbed less rapidly and to a less extent than mercurial ointment, and should, therefore, be given in greater concentration twice weekly. Mercuric salicylate in oil should be given hypodermically twice weekly instead of once. Mercuric chlorid by hypodermic injection, although the dose is very small, continues to be eliminated for several days, but the fact that its use is frequently followed by the appearance of protein in the urine should exclude it from the treatment of syphilis. Calomel by mouth is absorbed in small amounts and continues to be eliminated for a considerable time, so that it is probable that it would be sufficient to give it at intervals of several days without producing diarrheas. Mercury with chalk is absorbed to a small degree and eliminated rapidly, so that fairly large doses repeated daily would probably be necessary to maintain mercury in the circulation.

Incidence of Hereditary Syphilis

DRS. P. C. JEANS and JEAN V. COOKE, St. Louis: The histologic examination of the placenta as to the presence or absence of syphilitic changes corresponded to the established diagnosis in 95.5 per cent. of the cases. The lack of correspondence consisted entirely in finding no syphilitic changes in the placenta in cases in which the infant had syphilis. In every instance in which the placenta was noted as showing syphilitic changes, the infant was found later to have syphilis. The Wassermann reaction on the placental cord blood corresponded to the diagnosis in the infant in 96.5 per cent. Here also the discrepancies were entirely due to finding a negative Wassermann reaction in the fetal blood when the infant was syphilitic. In every instance in which the fetal blood gave a positive Wassermann reaction the infant was later found to have syphilis. In 1,000 cases examined there was an incidence of 5.5 per cent. among the poor of the white race, 16 per cent. among negroes, and 10 per cent. among the whole group of dispensary cases. The incidence among the combined middle and upper classes was 1.5 per cent. The total incidence in the whole series was 6 per cent.

DISCUSSION

DR. HENRY J. GERSTENBERGER, Cleveland: Among 20,000 patients we found an incidence of syphilis of 14 per cent. There was little difference in the incidence of syphilis as determined clinically alone and that since the Wassermann test has been employed.

DR. L. R. DE BUYS, New Orleans: The Wassermann test should be made on each infant, no matter what the mother's reaction may be. I have seen mothers negative from the Wassermann standpoint and in perfect health, and yet their children were decidedly syphilitic and gave a positive Wassermann reaction. I have also seen the mother give a negative Wassermann reaction, and one twin would be negative and the other positive.

DR. LANGLEY PORTER, San Francisco: In a small series of 118 cases, we found that unless the blood was heated we had a good deal of trouble with the anticomplementary properties of the cord blood. Of this number, 6.5 per cent. were syphilitic.

Lesions of the Midbrain

DR. J. H. MASON KNOX, Baltimore: A child aged 3 years, gradually developed bilateral ptosis, partial paralysis of the ocular muscles and a coarse tremor, followed by ataxia. These symptoms persisted for three months until the child died. At necropsy a tuberculoma the size of a hickory nut was found in the midbrain, involving the corpora quadrigemina and occluding the aqueduct of Sylvius.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

May 1, 1920, **52**, No. 1

*Gastric Response to Foods. Psychic Secretion of Gastric Juice in Normal Men. R. J. Miller, O. Bergeim, M. E. Rehfuss and P. B. Hawk, Philadelphia.—p. 1.

*Id. Influence of Tea, Coffee and Cocoa on Digestion. R. J. Miller, O. Bergeim, M. E. Rehfuss and P. B. Hawk, Philadelphia.—p. 28.

Rapid Blood Plasma Protein Depletion and Curve of Regeneration. H. P. Smith, A. E. Belt and G. H. Whipple, San Francisco.—p. 54.

*Shock as Manifestation of Tissue Injury Following Rapid Plasma Protein Depletion. G. H. Whipple, H. P. Smith and A. E. Belt, San Francisco.—p. 72.

*Factors Concerned in Perfusion of Living Organs and Tissues. A. E. Belt, H. P. Smith and G. H. Whipple, San Francisco.—p. 101.

Seasonal Variation in Growth of Boston, School Children. W. T. Porter, Boston.—p. 121.

*Certain Changes Noted in Ergographic Response as a Result of Tobacco Smoking. T. Raphael, Ann Arbor, Mich.—p. 132.

*Determination of Capillary Blood Pressure in Man with Microcapillary Tonometer. C. S. Danzer and D. R. Hooker, Baltimore.—p. 136.

*Plethysmographic Study of Shock and Stammering in a Trephined Stammerer. S. D. Robbins, Cambridge, Mass.—p. 168.

Chemical Constitution of Adenine Nucleotide and of Yeast Nucleic Acid. W. Jones, Baltimore.—p. 193.

Action of Boiled Pancreas Extract on Yeast Nucleic Acid. W. Jones, Baltimore.—p. 203.

Psychic Secretion of Gastric Juice.—The sight alone of a table well set with nourishing foods was found by Miller and his associates to give rise to a distinct secretion of gastric juice in normal men. Odor alone produced less stimulation than sight alone. The tasting and chewing of food in the absence of smell or sight produced no marked psychic secretion. The combined influence of the tasting, chewing and smelling of food was pronounced and much greater than that of smell alone. The sound and thought alone of a frying steak gave rise to a gastric secretion. The influence of smell with hearing produced little additional effect. Evil odors depressed secretion to the level of the continuous secretion. Foods unpleasantly prepared, or unpalatable in appearance, odor, taste and belief in their unwholesome character led to delayed acid response and evacuation. Newspaper reading during the course of a meal could not be shown to have any distinct influence on gastric digestion.

Gastric Response to Tea, Coffee and Cocoa.—A study was made by Miller and others of the influence of water, tea, coffee and cocoa on the gastric digestion of a uniform mixed meal as measured by the acid responses and evacuation times. Evacuation of the stomach was not appreciably delayed by the drinking of 1 liter of cold water, cold or hot tea, hot coffee, either plain, with cream or with cream and sugar. The addition of sugar alone to coffee delayed evacuation. Cocoa in 1 liter quantities markedly delayed evacuation. To a less extent this was true of half-liter volumes. One liter quantities of water, hot or cold tea, hot coffee, plain or with cream, delayed somewhat the rise of the level of intragastric acidity as compared with the basal meal alone. As high acidities and normal evacuation were, however, attained these beverages must have stimulated gastric secretion, been rapidly evacuated, or more probably both. Coffee with sugar alone delayed the development of gastric acidity. Coffee with sugar and cream had less effect. Cocoa delayed distinctly the development of intragastric acidity. One liter quantities of tea and coffee gave rise to marked acceleration of the heart beat, to vasomotor relaxation, tremors and other nervous symptoms. Cocoa did not produce these effects but brought about a feeling of fulness at the stomach. Urine secretion during the first ninety minutes after tea or coffee ingestion varied from 550 to 866 c.c., after cocoa from 125 to 372 c.c.

Relation of Blood Proteins to Shock.—According to Whipple and his associates, a fatal shock reaction is almost constant following even a moderate plasma depletion preceded by liver injury. This would indicate that the liver cells are particularly concerned in the peculiar shock reaction which may follow plasmapheresis and lowering of the blood plasma protein values. It may be that this type of "shock" is not unlike the common "surgical shock." The evidence of these experiments gives strong support to the theory that in "shock" there is a primary cell injury which precedes the familiar clinical reaction.

Organ Perfusion.—The authors maintain that much of the work done with organ perfusion is of little value because a proper appreciation of the limitations of the method does not obtain among laboratory workers. The use of physiologic sodium chlorid solution, Locke's solution or various modified solutions with or without red blood corpuscles does not permit of physiological perfusion of organs. The contact of these salt solutions with the tissue cells will result in profound injury or actual cell destruction.

Effect of Tobacco on Ergographic Response.—On the basis of the results obtained in Raphael's study, it appears that under the influence of tobacco smoking, a distinct periodicity may be demonstrated in the curve of ergographic response, arising apparently as a result of central nervous system fatigue or depression.

Capillary Blood Pressure in Man.—A method for the study of capillary blood pressure is presented by Danzer and Hooker which differs from all of the previous methods in the criterion at which the readings are taken. It depends on the production of stagnation of the flow of corpuscles in the capillaries. With this method capillary pressure in man can be determined in the fingers and in the toes. The average capillary blood pressure in normal individuals was 22.2 mm. Hg. Cold lowers and heat raises capillary blood pressure. Posture was found to vary capillary pressure although the hand was at heart level at all time. It was lowest in the recumbent, highest in the standing and midway between in the sitting posture. The diurnal variation is very slight. Increased intrathoracic pressure raises capillary pressure. Diminished intrathoracic pressure lowers capillary pressure. Venous compression causes an increased capillary blood pressure. The authors believe that the prevalent conception that the redness of the skin is due to its capillaries and that pallor means capillary emptying, is erroneous. While undoubtedly contributing somewhat to the color of the skin, nevertheless the rôle of the capillaries is rather slight. The venous plexuses principally contribute to the color of the skin. The collapse of these plexuses is the principal cause of skin pallor resulting from compression. The authors propose as the name of their apparatus, the "microcapillary tonometer."

Stammering and Brain Volume.—Pronounced shock, fear of stammering and emotions of every kind always brought about increase in brain volume accompanied by increased size of pulse in Robbins' patient.

Annals of Surgery, New York

May, 1920, **71**, No. 5

*Finger Exploration of Gunshot Wounds of Brain. E. B. Towne and T. R. Goethals, Boston.—p. 531.

Craniocerebral Wounds Due to Projectiles. R. H. Fowler, Brooklyn. —p. 560.

*Foreign Bodies of Dental Origin in a Bronchus; Pulmonary Complication. C. A. Hedblom, Rochester, Minn.—p. 568.

Multiple Hemorrhage Foci In Bone. G. Barrie, New York.—p. 581.

*Compression Fractures of Lower End of Radius. J. H. Stevens, Boston.—p. 594.

Pseudomyxoma Peritonei. Report of Six Cases. M. H. Biggs, Rutherfordton, N. C.—p. 619.

*Sarcoma of Stomach. J. Douglas, New York.—p. 628.

Hyperplastic Tuberculosis of Intestines Report of Six Cases S. Erdman, New York.—p. 637.

*Results Obtained in Treatment of Chronic Arthritis by Removal of Distant Focus of Infection. H. S. Chapman, San Francisco.—p. 643.

Injuries of Semilunar Cartilages of Knee Joint. M. S. Henderson, Rochester, Minn.—p. 658.

Use of Hyclorite and Modified Surgical Solution of Chlorinated Soda As Substitute for Original Dakin's Solution. E. P. Heller, Philadelphia.—p. 663.

Gastro-Enterostomy Clamp Simplified and Improved. H. L. Foss, Danville, Pa.—p. 668.

Finger Exploration of Brain Wounds.—Of the 61 cases of head wounds discussed by Towne and Goethals, 22 were scalp wounds, 11 were fractures, with intact dura, 28 patients had an open dura with brain wound. The 11 scalp wounds and 22 fractures with unopened dura brought out nothing of

interest. The mortality in these cases is practically nil unless other wounds are fatal, as happened twice in this series. This report is concerned with the 28 cases of wound of the brain of which 20 were operated and 8 were inoperable. These patients were treated with the conception that the problem involved was the absolutely complete removal of contaminated damaged brain, blood clot, hair, cloth, bone and metal, so that primary suture might result in clean healing. The method adopted was to suck and irrigate out the brain and clot, and then extract with fine forceps bone and metallic fragments detected by a gentle palpating finger, provided the cavity was sufficiently large to admit the finger. The size of the hole in the dura was not taken as an index, but was enlarged if necessary. In some cases this finger technic, always (with one exception) preferred if possible, was contraindicated by the small size of the track in brain substance, or by the awkward situation of wounds caused by missiles passing in via the deep nasal sinuses; in these instances cleaning was done as well as possible with catheter and forceps. Of the 28 cases 8 were considered inoperable and died without intervention in a few hours; 20 were operated, and of these, 7 died, giving a mortality of 35 per cent. Of 13 evacuated cases, 12 healed by first intention, and the other developed a septic brain fungus, which was not fatal, after a prolonged attempt to clean a cavity by the catheter forceps technic. In only one instance did routine postoperative examination show a slight and temporary increase in the signs of brain injury. Several cases are reported in which it seems highly improbable that the foreign bodies could have been removed without finger palpation. Later results in the 13 evacuated cases for periods of from six to twenty-one months after operation show that there were no late abscesses, that six patients were working, that major epilepsy developed twice, and that two only can be considered as not distinctly subnormal.

Foreign Bodies of Dental Origin in Bronchus.—There have been at the Mayo Clinic during the past four years seven cases of pulmonary suppuration following dental operations or trauma. In two cases the tooth was spontaneously expelled; in one it was discharged through a thoracotomy wound, and in one it was found at postmortem. In the other cases no foreign body was found, but it is quite probable that they were also cases of infection from inhalation. Hedblom has collected forty-five proved cases from the literature. These fifty-two cases form the basis of this report.

Compression Fractures of Lower End of Radius.—Stevens maintains that fractures of the lower end of the radius (so-called Colles) are always compression fractures, the compressive side breaking first, literally collapsing. The first point of fracture is the point of greatest compression on the cortical surface of the bone because the stress increases both in compression and tension the further away from the neutral axis. It breaks in compression because the compression is much greater than the tension. Early reduction followed by early passive and active motion will return all or nearly all compressive fractures of the radius to useful light occupation within twenty days. Any retentive apparatus other than a leather wrist strap after ten to twelve days is contraindicated except in a very rare instance.

Sarcoma of Stomach.—The total number of authenticated cases of sarcoma of the stomach now recorded, Douglas says, is 230 with a probably larger number on record, the reports of which are not available. Of a total of ninety-two operative cases, sixty-nine were resections either of the exogastric tumor or of part of the stomach and twenty-three were either gastro-enterostomies or exploratory laparotomies. Sarcoma of the stomach occurs in 1 per cent. of all stomach tumors. The average age of incidence is 41.6, in contrast with an average age of 61.2 for carcinoma. Round cell and lymphosarcoma are the most frequent forms found. They are more apt to be infiltrating, but the round cell may project into the stomach or form pedunculated tumors. They result in ulceration oftener than in other sarcomata, but not as frequently as in carcinoma. Spindle cell and myosarcoma are apt to form large exogastric tumors. The diagnosis can rarely be made with certainty; the roentgen-ray examination furnishes the most useful evidence.

Treatment of Chronic Arthritis.—Fifty per cent. of the cases of chronic arthritis treated at the Stanford University clinics by the removal of foci of infection showed definite improvement. The most striking results were obtained in those cases in which the focus was situated in the genito-urinary tract. Very rapid recovery with very few treatments were obtained in those cases in which the teeth were the seat of infection. Removal of the tonsils in several cases was followed in a few days by loss of pain, and later by return of function to the injured joint.

Archives of Ophthalmology, New York

May, 1920, **49**, No 3

Ring Magnet. T. Harrison Butler, Birmingham, England.—p. 247.
*Radium and Roentgen Ray in Tumors of Hypophysis. D. Quick, New York.—p. 256.
*Nonsurgical Treatment of Pituitary Disorders. W. Timme, New York.—p. 268.
Capsule in Cataract Extraction. E. Jackson, Denver.—p. 275.
Iniial Developmetnt of Papillary Bodies in Human Conjunctiva. K. Hiwatari, Kagoshima, Japan.—p. 283.
Atypical Case of Coats's Disease of Retina. L. W. Crigler, New York.—p. 287.
Etiology and Diagnosis of Glaucoma and Control of Disease by Miotics. W. C. Posey, Philadelphia.—p. 293.
Tonometry of Glaucoma. W. McLean, New York.—p. 301.
Visual Fields in Glaucoma. L. C. Peter, Philadelphia.—p. 309.
Operative Treatment of Glaucoma. J. E. Weeks, New York.—p. 316.

Radium in Pituitary Disease.—In Quick's opinion the application of radium in hypophyseal tumors offers the best chance for an accurate approximation of a well selected dosage with a minimum risk to the patient. He reports three cases.

Nonsurgical Treatment of Pituitary Disease.—In cases of underactivity, presumably of the anterior lobe, Timme advises feeding of the whole gland in doses of from ½ grain, as infrequently as once or twice a week, up to 1 or even 2 grains, three times daily, depending on the reaction of the patient to the dose, especially as regards the production of headache, excitability, insomnia, nausea and vomiting, and rapid fatigability. But in addition thereto, either feeding of the anterior lobe, or hypodermic injections of the anterior lobe extract, will often be found of value, especially in the Froelich syndrome with genital lack of development and in low bodily temperatures. Very small doses of thyroid gland, 1/100 to 1/10 grain, every day or on alternate days, will frequently enhance the effect of the pituitary administration. In cases of overactivity, treatment depends on the cause for overactivity. If this cannot be found and eliminated, then give sedatives such as luminal, ½ grain, once or twice a day, for a few days at a time; pilocarpin, 1/10 grain, or acetanilid 2 grains, several times daily, as alternates. If disturbances in the genital sphere produce secondary pituitary activity, lutein or ovarian extract will be found of benefit. When the activity is secondary to a thyroidectomy, then small doses of thyroid gland will relieve the symptoms. In too early thymic involution, with pituitary overactivity, thymus gland, 1 to 5 grains, several times daily, is often effective. Occasionally, an inefficient chromaffin system will give rise to overactivity on the part of the pituitary, which may be offset by feeding whole gland suprarenal extract.

California State Journal of Medicine, San Francisco

June, 1920, **18**, No. 6

Roentgen-Ray in Diagnosis of Nontubercular Pulmonary Conditions. L. Bryan, San Francisco.—p. 219.
Malingering: Relation to Doctor. J. Catton, San Francisco.—p. 220.
New Form of Weight Chart for Infants. H. K. Faber, San Francisco.—p. 225.

Journal of Biological Chemistry, Baltimore

May, 1920, **42**, No. 1

*Proteins of Green Leaves. 1. Spinach Leaves. T. S. Osborne, A. J. Wakeman, C. S. Leavenworth and O. L. Nolan, New Haven, Conn.—p. 1.
*Digestibility of Raw Corn, Potato, and Wheat Starches. C. F. Langworthy and H. J. Deuel, Jr., Washington, D. C.—p. 27.
*Carbon Dioxid Content as a Basis for Distinguishing Heated from Unheated Milk. L. S. Van Slyke and R. F. Keeler, Geneva, N. Y.—p. 41.
*Distribution of Iodin between Cells and Colloid in Thyroid Gland. 1. Methods and Results of Study of Beef, Sheep and Pig Thyroid Glands. A. L. Tatum, Chicago.—p. 47.

Elimination of Taurine Administered to Man. C. L. A. Schmidt and E. G. Allen, Berkeley, Calif.—p. 55.
*Some Proteins from Georgia Velvet Bean, Stizolobium Deeringianum. C. O. Johns and H. C. Waterman, Washington, D. C.—p. 59.
*Experimental Studies on Growth. Growth of Relatively Long Lived Compared with that of Relatively Short Lived Animals. T. B. Robertson and L. A. Ray, Toronto.—p. 71.
Colorimetric Estimations with Solutions Containing Two Colored Substances. K. G. Falk and H. M. Noyes, New York.—p. 109.
*Fat Soluble Vitamin. VI. In Carrots, Alfalfa and Yellow Corn. H. Steenbock, P. W. Boutwell, M. T. Sell and E. G. Gross, Madison, Wis.—p. 131.
*Separation of Physiologically Active Portion of Posterior Lobe of Pituitary Body. F. Fenger and M. Hull, Chicago.—p. 153.
Utilization of Salep Mannan. M. S. Rose, New York.—p. 159.
*At What Level Do Milk Proteins Become Effective Supplements to Proteins of Cereal Grain? E. B. Hart and H. Steenbock, Madison, Wis.—p. 167.
Fermentation Characteristics of Certain Pentose Destroying Bacteria. E. B. Fred, W. H. Peterson and A. Davenport, Madison, Wis. —p. 175.
Photometric Turbidimeter. W. G. Bowers and J. Moyer, University, N. D.—p. 191.
Chemical Isolation of Antineuritic Vitamins. C. N. Myers and C. Voegtlin, Washington, D. C.—p. 199.
Osmotic Pressure of Serum and Erythrocyes in Various Vertebrate Types as Determined by Cryoscopic Method. J. B. Collip, Edmonton, Can.—p. 207.
Effect of Dilution on Osmotic Pressure and Electrical Conductivity of Whole Blood, Blood Serum and Corpuscles. J. B. Collip.—p. 213.
Osmotic Pressure of Tissue Determined by Cryoscopy. J. B. Collip. —p. 221.
Maintenance of Osmotic Pressure in Nucleus. J. B. Collip.—p. 227.

Proteins in Dry Spinach Leaves.—The authors show that spinach leaves dried at a low temperature and extracted with ether, alcohol, water, and alkaline solutions yield results so similar to those obtained with the fresh green leaf that evidently the constituents of the cells are altered to only a slight degree by drying.

Digestibility of Raw Corn, Potato and Wheat Starches.—Raw corn and wheat starches were found by Langworthh and Deuel to be completely assimilated and no trace of them could be found in the feces. Seven experiments on raw potato starch gave values for its digestibility varying from 62.3 to 95.2 per cent.; the average was 78.2 per cent. The ingestion of the potato starch caused disagreeable physiological disturbances not noted in the other experiments with raw corn and wheat starches. The digestibility of the other constituents of the diet was not affected to any great extent by the large amounts of raw starch ingested.

Carbon Dioxid Content of Heated and Unheated Milk.—It appears that, under the conditions to which normal unheated milk is subjected in its handling from the time of milking to the time of delivery to the consumer, the volume percentage of carbon dioxid rarely, if ever, drops below 3 and seldom below 3.5, while the subjection of normal milk to the conditions of heating used in pasteurization reduces the percentage of carbon dioxid by volume to 2.5 or less. Therefore, it appears safe, in general, to assume that milk containing less than 3 per cent. of carbon dioxid by volume has been heated to the temperature of pasteurization.

Iodin in Thyroid.—A new method is described by Tatum for the separation of cells from colloid of the thyroid gland for chemical study. Iodin is found in both cells and colloid of beef, sheep, and pig thyroid glands. The ratio of percentages of iodin in cells to iodin in whole glands appears to be relatively constant for pig, sheep, and beef thyroid glands, even though such glands vary both in morphology and in total iodin content.

Proteins in Georgia Velvet Bean.—The Georgia velvet bean contains 23.6 per cent. of protein (N × 6.25). Two globulins, designated as the a and b-globulins, may be separated, in yields of about 3 and 1.25 per cent., respectively; and an albumin is found in extracts which have been freed from globulin by repeated dialysis. Analyses of the three proteins show marked differences in the nitrogen and sulphur content, and in the distribution of nitrogen as determined by Van Slyke's method. Qualitative examination indicates that the B-globulin contains no tryptophan, an observation of particular interest in view of the fact that this amino-acid has been found to be present in all seed globulins heretofore tested. The a-globulin and the albumin from the Georgia velvet bean both contain tryptophan.

Studies on Growth.—The hypothesis is presented by Robertson and Ray that the potential longevity of any given individual is determined by the relative velocities of anabolism in the cellular and sclerous tissues, respectively. In terms of this hypothesis it is suggested that the prolongation of life which is brought about by continuous administration of tethelin to mice is attributable to an increased velocity of anabolism of distinctively cellular elements to the relative disadvantage, in the competition for nutrients, of the connective tissue elements. If the administration of tethelin is discontinued prior to sexual maturity the normal proportion of cellular to connective tissues is rapidly restored and exceptionally large animals of normal or abbrevated duration of life are the result.

Fat Soluble Vitamin in Carrots.—When carrots are saturated with lard or corn oil and then extracted with ether none or little of the fat-soluble vitamin is removed. The lard preparation gave no evidence of containing the vitamin, but the corn oil preparation contained it in small but persistent amounts. Ether has little solvent properties for the fat-soluble vitamin as found in carrots; chloroform and carbon disulphid remove some of it; while alcohol and benzene remove considerable amounts of it. None is entirely satisfactory for extraction purposes.

Uterus Contracting Principle in Posterior Lobe of Pituitary.—Evidence is furnished by Fenger and Hull which indicates that the uterus contracting active principle of the posterior lobe of the pituitary body does not occur in the fresh gland in free or crystalline form, but is linked to or part of some protein complex. In its original protein association the uterine stimulus is insoluble in ether, petroleum ether, chloroform, and practically insoluble in absolute alcohol. It is sparingly soluble in 95 per cent. alcohol, but yields a highly active split product when treated with hot 95 per cent. alcohol. The split product is amorphous in ature, very hygroscopic, and much more sensitive to desiccation than the original basic material from which it was derived. The crystalline bodies naturally occurring in and isolated from the posterior lobe are inorganic salts possessing no uterus-contracting power. Alkaloidal reagents only incompletely precipitate the active fraction of the water extract of the gland.

Milk Proteins as Supplement to Cereal Proteins.—The results obtained by Hart and Steenbock show that highly efficient protein mixture is not obtained until the proportion of liquid milk to corn meal reaches 1:1; in this proportion the milk nitrogen will constitute approximately 30 per cent. of the total nitrogen of the ration.

Journal of Experimental Medicine, Baltimore

May 1, 1920, **31**, No. 5

*Experimental Pneumonia. III. Spontaneous Pneumonia in Monkeys. F. G. Blake and R. L. Cecil, Washington, D. C.—p. 499.
*Id. IV. Results for Prophylactic Vaccination against Pneumococcus Pneumonia in Monkeys. R. L. Cecil and F. G. Blake, Washington, D. C.—p. 519.
*Experimental Studies in Diabetes. Series I. Production and Control of Diabetes in the Dog. 3. Effects of Protein Diets. F. M. Allen, New York.—p. 555.
Id. 4. Control of Experimental Diabetes by Fasting and Total Dietary Restriction. F. M. Allen, New York.—p. 575.
*Id. 5. Various Failures of Dietetic Treatment, and Their Causes. F. M. Allen, New York.—p. 587.
Relation of Portal Blood to Liver Maintenance. Demonstration of Liver Atrophy Conditional on Compensation. P. Rous and L. D. Larimore, New York.—p. 609.
Epidemiology of Blackhead in Turkeys Under Approximately Natural Conditions. T. Smith and W. H. Graybill, Princeton, N. J.—p. 633.
Production of Fatal Blackhead in Turkeys by Feeding Embryonated Eggs of Heterakis Papillosa. H. W. Graybill and T. Smith, Princeton, N. J.—p. 647.

Spontaneous Pneumonia.—The close analogy between the epidemic of lobar pneumonia that occurred among monkeys at the Army Medical School and similar epidemics of lobar pneumonia that occurred during the war among certain groups of newly drafted troops shortly after their arrival at camp, Blake and Cecil believe indicates that pneumococcus pneumonia may become an epidemic disease among groups of susceptible individuals when they are assembled under conditions that facilitate the ready transfer of infection from

the individual to individual. Bacteriologic examination made by Blake and Cecil showed the spontaneous pneumonia to be due in the great majority of cases to infection with pneumococcus Type IV. Immunologic classification of the strains of pneumococci by cross-agglutination tests showed that the majority fell into two biologic groups. Two cases were apparently caused by *Streptococcus haemolyticus*, two by *Streptococcus viridans*. Study of the pathology of spontaneous pneumococcus pneumonia in monkeys showed that it presented the characteristic picture of lobar pneumonia, both macroscopically and microscopically, and was in all respects comparable with the pathology of lobar pneumonia, experimentally produced in monkeys and with lobar pneumonia in man.

Prophylactic Vaccination Against Pneumonia.—Cecil and Blake found that the subcutaneous inoculation of monkeys with pneumococcus Type I vaccine in doses comparable with those employed in man does not protect them against subsequent attacks of pneumococcus Type I pneumonia, either spontaneous or experimental. Furthermore, the occurrence of pneumococcus Type IV pneumonia among monkeys that have been vaccinated with pneumococcus Type I lipovaccine indicates that the vaccinated animals develop no cross protection against other types of pneumonia. Vaccination doses, however, modify the course of the disease. Invasion of the blood stream by the pneumococcus in vaccinated animals is usually slight, and the proportion of recoveries is considerably higher for vaccinated than for unvaccinated monkeys. Pneumococcus saline vaccine produces a greater amount of protective substance in the serum of the vaccinated animal than does pneumococcus lipovaccine and is probably, therefore, a better antigen. Both, however, fail to protect the animal against pneumococcus pneumonia.

Effects of Protein on Diabetes.—No specific differences were observed by Allen between the glycosuric effects of different kinds of protein. Other incidental observations were noted in connection with the records of individual animals. General conclusions are deferred to the close of the series.

Failures of Dietetic Treatment of Diabetes.—Practically every detail of clinical diabetes was reproduced by Allen in partially depancreatized animals. Every detail of the downward progress of human patients on various diets in reproduced in such animals. Varying degrees of success and failure in the dietetic control of diabetes are also illustrated. A claim of saving every patient, no matter how near death, Allen says, would be a preposterous one for any remedy in any disease, and the animal experiments do not support such a claim for diabetes. Also it is unreasonable to expect the actual care of an organic deficiency by diet, and the diet treatment in animals just as in patients generally represents the sparing rather than the restoration of the weakened function. The basis of the belief is the inherently progressive tendency of severe cases of clinical diabetes is shaken by the exact reproduction of such case histories by diet in animals which are free from spontaneous downward tendencies; but there is still lack of a sufficient number of patients treated on the principle of relief of the total metabolic burden to demonstrate the absence of such inherent progressiveness in human diabetes.

Journal of Laboratory and Clinical Medicine, St. Louis

May, 1920, **5**, No. 8

Acion of Ethylenediamine. H. G. Barbour and A. M. Hjort, New Haven, Conn.—p. 477.
Chemical Changes in Blood in Disease. Uric Acid. V. C. Myers, New York.—p. 490.
*Bacteriologic Data on Epidemiology of Respiratory Diseases in Army. H. J. Nichols, Washington, D. C.—p. 502.
Chronic Poisoning from Hydrocyanic Acid. C. I. Reed, Lawrence, Kan.—p. 512.
Indicanuria and Acetonuria of Gastrointestinal Origin. E. R. Wilson, Los Angeles.—p. 515.
Arsphenamin and Neoarsphenamin. W. A. Smith, Springfield, Ill.—p. 518.
Primary Cancer of Liver. I. M. Cohn, Spokane, Wash.—p. 528.
Effect of Tobacco on Vascular Wall. Tsang G. Ni, China—p. 534.
Selection of Kieselguhr for Filtration of Serums. G. E. Ewe, Philadelphia.—p. 538.
Convenient Stopcock-Needle-Cannula. P. J. Hanzlik, Cleveland.—p 540.
New Urinometer. J. Rosenbloom, Pittsburgh.—p. 542.

Epidemiology of Respiratory Diseases.—Nichols supports the inhalation theory of the transmission of respiratory diseases. No evidence was found by him to support the theory that these organisms spread through dish water. Dish water showed no streptococci except when no soap was used. Infection of the mouth did not occur when streptococci were smeared on the lips. Soapy dish water is antiseptic for streptococci if of proper reaction and made with proper soap. Evidence was found, however, that intestinal organisms can spread through dish water.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

May, 1920, **15**, No. 3

*Reaction of Cat's Uterus to Strophanthus and Calcium. F. Ransom, London.—p. 181.
*Point of Attack of Certain Drugs Acting on Periphery. I. Action on Bladder. C. W. Edmunds and G. B. Roth, Ann Arbor, Mich.—p. 189.
*Id. II. Action on Retractor Penis Muscle of Dog. C. W. Edmunds, Ann Arbor, Mich.—p. 201.
Influence of Heavy Metals on Isolated Frog Heart. W. Salant and H. Connet.—p. 217.

Reaction of Uterus to Strophanthus and Calcium.—The investigations made by Ransom show that the movements of the excised cat's uterus, which have been diminished or arrested by placing it in a Ringer's fluid containing no calcium, are restored and usually increased by the addition of strophanthus. The effect of quite a short exposure of uterine muscle to strophanthus is to make it extraordinarily responsive to calcium. It is suggested that some forms of postpartum hemorrhage may be due to subsistence on a diet poor in calcium affecting the efficiency of the uterine muscle, and that in such cases strophanthin might usefully be injected intravenously.

Point of Attack of Epinephrin, Nicotin, etc.—The point of action of a number of drugs can be defined pretty accurately: epinephrin produces its effects by an action on the myoneural junctions of the true sympathetic nerves, and nicotin probably produces its effects on the bladder by an action on the ganglia along the course of the nerves going to the organ, although this is not certain, as the experiments described by Edmunds and Roth show that there is, in addition to the action on the ganglia, also a direct effect on the muscle. Morphin, and probably the pilocarpin-atropin series, including curara act along the course of the parasympathetics at a point about which there is still discussion as to whether it is nerve end, or myoneural junction. Or, it may be that the contractile substance proper is affected and the points of attack may not be the same in all organs and localities.

Action of Pilocarpin, etc., on Retractor Penis.—The action of pilocarpin, physostigmin, atropin and nicotin on the retractor penis muscle of the dog is a direct one on the muscle proper and there is nothing to indicate that the same may not hold good for their action on the bladder, with the possible exception of nicotin, which may also act on the ganglia along the course of the nerves going to that organ. In the case of other organs and structures such as the iris, bronchial muscles, uterus, etc., the same general rule will not hold as the action may be one on nerve endings or on myoneural junctions, or on the muscle substance proper. It is, therefore, dangerous to speak of these alkaloids as being stimulants of the "parasympathetic nerve endings" or of the "myoneural junctions."

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

April, 1920, **7**, No. 28

*Traumatic Aneurysm of Right Subclavian Artery Treated by Ligature. J. McClure.—p. 438.
*Surgery of Chest in Relation to Retained Projectiles. B. Moynihan.—p. 444.
*Histologic Resemblances of Oriental Sore to Epithelioma. W. Macadam.—p. 487.
*Intussusception Occurring in Course of Typhoid. A. L. Moreton.—p. 490.

Difficulties in Diagnosis of Nerve Function. M. Forrester-Brown.—p. 495.
Operation for Chronic Dislocation of Peroneal Tendons R. E. Kelly.—p. 502.
Crucial Ligaments of Knee-Joint: Function, Rupture and Operative Treatment. E. W. Hey Groves.—p. 505.
Treatment of Trigeminal Neuralgia by Injection of Alcohol into Gasserian Ganglion. H. H. Rayner.—p. 516.
*Cyst of Common Bile Duct. A. A. McConnell.—p. 520.
*Hemorrhage and Postoperative Obstruction in Suprapubic Prostatectomy. J. W. T. Walker.—p. 525.
*Thigh Rotation or Obturator Test: New Sign in Some Inflammatory Abdominal Conditions. V. Z. Cope.—p. 537.
Case of Extensive Keloid of Ear Lobes. R. Morison.—p. 538.
Abdominothoracic Gunshot Wound: Diaphragmatic Hernia of Stomach. S. Barling.—p. 539.
Retroperitoneal Hematoma after Radical Cure of Inguinal Hernia and Varicocele. C. H. Fagge.—p. 542.
Unusual Wound of Abdomen. J. B. Haycraft.—p. 543.
Two Cases of Strangulated Intestine Partly Contained in Hernial Sacs. H. Chitty.—p. 545.
*Uncommon Injury of Carpus. C. P. G. Wakeley.—p. 546.

Traumatic Aneurysm of Subclavian Artery.—A case of traumatic aneurysm of the subclavian artery, associated with a concurrent brachial monoplegia, was treated by ligature of the first portion of the subclavian trunk and vertebral artery. Relief from great suffering and pain followed the application of the ligature. The patient's general condition improved rapidly, and active motion in the shoulder became normal.

Surgery of Chest.—Forty-nine patients have been treated by Moynihan by operation. Two patients died, one from hemorrhage following the removal of a projectile from the root of the lung, and one from sepsis after the removal of an infected foreign body and a piece of clothing. Twenty-four patients are in perfect health, and are able to do heavy work; fourteen are better than before operation, but still have some shortness of breath, or unusual respiratory trouble when having a cold or in bad weather. Two patients died; three are unable to do any work, or have serious respiratory trouble, shortness of breath, cough, etc. All but five patients were operated on by the ordinary anterior method. The five operated on by direct attack from behind show four with good ultimate results, one with fair result. Eighteen of the foreign bodies were examined bacteriologically, eleven were infected with *Staphylococcus aureus*, or *Streptococcus brevis* in equal numbers, or by these organisms together with coliform bacilli; seven were sterile Empyema after operation developed in five cases, and in each of these, when the foreign body was examined, it was found to be infected Of the seven which did not suppurate, only once was the foreign body examined, and it was sterile.

Oriental Sore Resembles Epithelioma.—The excised skin lesions of the type of Oriental sore, sometimes called Baghdad boil, Delhi sore, etc., examined by Macadam, mostly showed the characters of a chronic ulcer, those of greater chronicity having some epithelial downgrowth at the margin, but in two instances the histologic characters were such as to be practically indistinguishable from a squamous celled carcinoma.

Intussusception During Typhoid.—The temperature of the patient whose case is cited by Moreton had been raised, although not typical but rather of the remittent type, until the forty-seventh day of the disease. On that morning, the temperature fell suddenly to 97.8 F., and the patient had a severe attack of vomiting. Although the signs characteristic of perforation were absent, it seemed the most probable cause of her condition notwithstanding. Other possibilities were that the case was one in which a slow leakage had taken place, and the leak had been shut off by adhesions; or that it was a case of localized peritonitis without macroscopic perforation. The abdomen was opened, a mass was felt in the ileocecal region. This was found to be an enteric intussusception which had become enterocolic. Its apex was at a point of the ileum 5 inches from the ileocecal valve. This had become invaginated into, and had extended 4 inches up the lumen of, the ascending colon. The ileocecal valve was not invaginated so that the intussusception was of the subdivision "iliaca-ileo-colica." The intussusception was reduced without difficulty. No perforation was found. The patient lived. Ten other cases of this condition are mentioned in the literature.

Cyst of Common Bile Duct.—Only thirty-five cases of this condition have been reported. The diagnosis has never been made before operation, and the operative treatment has not yielded good results. In McConnell's case, the cyst extended from the extreme right side of the abdomen to a point some distance to the left of the middle line, and lay between the aorta, vena cava and right kidney behind, and the pancreas and duodenum in front. The cyst was as aspirated. About one year later some leakage of bile took place at the original site of drainage. The original wound was opened and a large quantity of pus, mixed with bile, evacuated. Eighteen months later a third operation was performed. The cyst had shrunk to the size of a walnut, and occupied a position between the second stage of the duodenum and the right kidney. The patient made an uneventful recovery.

Avoiding Hemorrhage and Obstruction After Prostatectomy.—In Walker's opinion, prevention of these two complications lies in performing an open operation in which the bladder and prostatic cavity are fully exposed, the hemorrhage is treated, and all nodules and strips of tissue and valves are removed. The operation is described in detail.

Thigh Rotation or Obturator Test for Appendicitis.—Cope says a diagnosis of appendicitis may be facilitated by bringing the obturator internus muscle into action; thus pain may be caused by the dragging of the contiguous inflamed tissues. The test is elicited as follows: The right thigh is slightly flexed (so as to relax the psoas muscle); the limb is then fully rotated at the hip, first internally and then externally, so as to put the obturator internus through a full range of movement. The sign is positive if the patient complains of hypogastric pain when the limb is moved in this manner.

Injury of Carpus.—Wakeley's patient was thrown from his motorcycle and landed on his outstretched righ hand. He sustained a fracture of the styloid process of the radius, a fracture through the neck of the os magnum, dislocation of the scaphoid inward and dislocation of the semilunar forward, with rotation on its transverse axis.

British Medical Journal, London

May 29, 1920, 1, No. 3,100

Toxemias of Pregnancy. A. W. Bourne.—p. 727.
*Collective Investigation of Ten Thousand Recruits with Doubtful Heart Conditions. C. C. Gibre and others.—p. 730.
Immediate Closure of Empyemas. F. Hathaway.—p. 734.

Causes of Valvular Heart Disease.—Taking aortic regurgitation and mitral stenosis as the two typical valvular lesions which can be diagnosed with comparative certainty during life the results of this statistical inquiry have led to the following conclusions: The most important etiologic factor in the production of organic lesions of the heart valves in men between the ages of 18 and 41 is rheumatic fever. Strain can independently produce aortic regurgitation. While strain may be a cause of mitral stenosis, it is a much less important factor than in the production of aortic regurgitation. There is a third agent giving rise to symptoms simulating influenza, which is an efficient cause of mitral stenosis, and can possibly affect the aortic valves as well, but is not nearly so likely to do so. The authors have been unable to find any statistical evidence that syphilis, scarlet fever, diphtheria, pneumonia, or gonorrhea, are causes of valvular lesions, nor can we find statistical evidence that a history of growing pains points to affections productive of valvular lesions. The same may be said, with slight reservations, of a history of rheumatism where there is no clear account of pain, swelling of the joints, fever, or confinement to bed. The evidence in favor of chorea as an efficient cause of mitral stenosis is strong, and some, though not very striking, evidence in confirmation of the view that chorea and rheumatic fever are both manifestations of the activity of a common cause has been found.

Glasgow Medical Journal

May, 1920, 11, No. 5

Penetrating Gunshot Wounds of Chest. R. F. Young.—p. 193.
Fatality of Peptic Ulcer and Importance of Early Diagnosis. J. Carslaw and J. M. Cowan.—p. 211.

Japan Medical World, Tokyo

May 1, 1920, **10**, No. 18

Antirabic Treatment of the Dog. S. Umeno and R. Dol.
Vital Staining; Stain Granules inCells. K. Kiyono and H. Hoshijima.

May 8, 1920, **10**, No. 19

Vital Staining; Stain Granules in Cells. K. Kiyono and H. Hoshijima.
First Intermediate Host of Paragonimus Westermanii. A. Ando.

May 15, 1920, **10**, No. 20

First Intermediate Host of Paragonimus Westermanii. A. Ando.
Early Diagnosis of Gastric Cancer. H. Tsuzi.

May 22, 1920, **10**, No. 21

Early Diagnosis of Gastric Cancer K. Tsuzi.
Route in Host's Body Taken by Schistosoma Janica. Y. Suyeyasu.
Therapy of Liver Distomiasis. S. Kakebi, K. Mackawa and G. Toide.

Lancet, London

June 5, 1920, **1**, No. 5049

Principles of Medical Science as Applied to Military Aviation. J. L. Birley.—p. 1205.
*Vital Capacity Constants Applied to Study of Pulmonary Tuberculosis. G. Dreyer and L. S. T. Burrell.—p. 1212.
Blood Transfusion: Its Theory and Practice G. Keynes.—p. 1216.
*Effects of Occupation and Race on Health of Recruits. G. R. Hall. —p. 1218.
*Actinomycosis of Cecum. Report of Case. E. G. Slesinger.—p. 1220.
*Case of Paratyphoid "C" Fever in East Africa. R. P. Garrow.—p. 1221.
Psychoanalysis and Psychotherapy J. Crichton-Browne.—p. 1248.

Vital Capacity Constants in Pulmonary Tuberculosis.—A definite decrease in vital capacity as compared with what should be normal for any person, taking into account the class in which this person should be placed according to occupation and mode of life, Dreyer and Burrell claim is characteristic of pulmonary tuberculosis. An improvement in the clinical condition of the patient is found to be accompanied by an increased vital capacity, while an advance of the disease results in a decrease in vital capacity. The vital capacity, therefore, gives a valuable quantitative measure of the benefit, if any, which the patient receives as a result of treatment. The determination of the vital capacity is also useful for the classification of cases of pulmonary tuberculosis, because it is possible by this means numerically to express the injury to health (e. g., degree of toxemia) which otherwise would depend on the individual interpretation of physical signs by different observers. In this connection it should be noted that classification by physical signs alone may place a patient nearing death from an acute lesion in a high category, while another patient, with satisfactory fibrosis and extensive cavitation, likely to live for several years, may be placed in the lowest category. As an aid to diagnosis a single or repeated examination of the vital capacity of doubtful cases will also prove useful.

Effect of Occupation and Race on Heart Disease.—An analysis of 2,500 heart cases was made by Hall. Of these 40 per cent. had what is known as heart disease, that is V. D. H. (valvular disease of heart), or excessive myocardial change. The illness of 50 per cent. was due to want of tone and minor causes, nearly all quite curable if the people concerned had been in a good financial position. In other words many of these will drift into invalidism and national inefficiency for want of a fair chance. Another interesting feature is the proportion of dark to fair people who figure in this list. Of the 2,500 heart cases, the proportion of dark to fair was 3 to 2, and since among the other recruits examined there were two fair to every one dark, heart trouble would appear to be three times as common among the dark elements. As regards hyperthyroid action, the dark are affected in the proportion of ten to one. The surprisingly high categories in which clerks were placed shows that this occupation need not be unhealthy; while the absolute ill health of the Russian Jews, as a whole, and the close approximation of Jewish lads of 18 born abroad, but reared in Britain, to the British standard at the same age, proves there is nothing radically wrong with the physique of the Jewish race.

Actinomycosis of Cecum.—The case reported by Slesinger is unusual on account of the localized nature of the lesion and the onset with generalized peritonitis.

Paratyphoid C.—An organism corresponding in every way with Hirschfeld's organism was isolated by hemoculture in a case of continued fever in the course of routine blood culture for the diagnosis of puzzling pyrexias. This was the only case of paratyphoid C found—a sporadic case, thus differing from cases found elsewhere.

Medical Journal of Australia, Sydney

May 1, 1920, **1**, No. 18

Conservative Treatment of Eclampsia. R. M. Allan.—p. 405.
Rodent Ulcers and Allied Growths. J. B. Cleland and N. Paul.—p. 407.

May 8, 1920, **1**, No. 19

Labyrinthine Complications in Middle Ear Suppurations H. J. Marks. —p. 429.
Blood Transfusion. J. J. Power.—p. 440.

National Medical Journal of China, Shanghai

March, 1920, **6**, No. 1

Management of 1919 Cholera Epidemic in Harbin. Wu Lien-Teh and J. W. H. Chun.—p. 4.
*Incidence of Abdominal Disease in Chinese. J. Heng Liu.—p. 17.
*Pathogenicity of Ascaris Lumbricoides: Report of Cases. E. S. Tyau. —p. 21.
Selection of Men for Aviation Service. H. J. Howard.—p. 29.
Use of Boiled Beef Bone as Transplants in Tuberculosis of Spine and as Internal Splints in Reduction of Fractures. Way Sung New. —p. 36.
Nutritive Value of Soy Bean Products. W. H. Adolph and P. C. Kiang.—p. 40.
Etiology of Last Cholera Epidemic. E. T. H. Tsen.—p. 49.

Abdominal Disease in Chinese.—The average Chinese hospital, supposing it has the same bed capacity as the Massachusetts General Hospital, admits only one sixth as many abdominal cases, and sees less than one fifth as many laparotomies. Appendicitis is a common disease among the Chinese. In fact, excepting hernia, it is the most common abdominal condition which comes to the hospitals for treatment. Liver cirrhosis and splenomegaly of various and often indeterminate etiology compose 17 per cent. of all the abdominal cases seen in the Chinese hospitals.

Ascaris Lumbricoides in Bile Passages.—Tyau reports the case of a man admitted to the hospital complaining of pain in the epigastrium and general debility. The pain began about three months before, and slowly got worse and worse. It was a dull pain, occurring usually in the afternoon and after meals and lasting about three hours. It was felt chiefly in the epigastrium and occasionally over the hepatic region; it did not radiate to the back or shoulder. During the attack of pain nothing could be taken into the stomach. The appetite was poor and the bowels irregular. A nodular swelling about the size of an egg was palpable below the right costal margin which was slightly tender on deep palpation. Laboratory findings: Urine negative; gastric analysis showed hypochlorhydria; blood, secondary anemia; feces showed many ova of ascaris and a few of trichuris. After a course of santonin treatment about eighteen worms were passed with the feces. But the patient did not improve. There was no fever. The patient died five days after the santonin treatment. At the necropsy, the liver was found to be much enlarged on the lateral and posterior aspects. The gallbladder was greatly distended and the cystic duct was blocked by nine ascaris worms. The liver contained numerous abscesses with copious pus, and in the bile ducts were embedded a number of young ascaris worms, some measuring only 1.25 inches long. In the intestine fifteen ascaris worms, all female and one trichuris was found. Numerous eggs were found in the gallbladder and the liver. Sections of the liver showed marked fibrosis with deposits of biliary pigments, and degeneration of the cells.

South African Medical Record, Cape Town

April 24, 1920, **18**, No. 8

Continuous Administration of Nitrous Oxid in Dental Surgery. W. A. Rail.—p. 144.
Tic Douloureux. A. M. Moll.—p. 147.

May 8, 1920, **18**, No. 9

Extragenital Chancres. B. Bernstein.—p. 163.
Epidemic Influenza. P. T. Cairns.—p. 165.
Tympanic Membrane: Correct Form and Reflecting Areas. J. L. Aymard.—p. 167.
*Specific Complement Fixation Test for Bilharziasis. W. A. Murray. —p. 168.
*Ruptured Ectopic Gestation Combined with Pregnancy in Utero. C. C. Elliott.—p. 169.

Complement Fixation Test for Bilharziasis.—The technic employed by Murray is based on a modification of the original Wassermann test, and the results have been satisfactory, although the number of tests actually performed has been small. Antigen obtained from the livers of snails (*Physopsis africana*) infected with the cercariae of *Schistosmo haematobium* was used. The livers are ground up in alcohol (1 gm. liver substance to 10 c.c. alcohol); the mixture is kept at room temperature for five days, with frequent shaking; is then filtered, and the alcoholic extract is used as antigen. For the test the antigen is mixed with 1 per cent. cholesterin (3:2), and is then titrated. The three antigens used so far have each given an anticomplementary titer of 1:3, and an antigenic titer of 1:80. A dilution of 1:8 is used in the actual test. The amboceptor, complement and sheep cells are used exactly as in the Wassermann test. Murray says that the presence or absence of bilharzial disease may be diagnosed with accuracy from the blood serum of any patient.

Simultaneous Ectopic and Uterine Pregnancy.—In the case cited by C. C. Elliott, an attack of sudden severe abdominal pain led to the diagnosis of ruptured ulcer of the stomach. The woman was having her usual menstrual flow, and gave no history of missing a period. Elliott operated and found the right fallopian tube, near its outer third, ruptured in what was an early pregnancy, possibly a month or six weeks. The uterus was somewhat enlarged, but Elliott did not consider this abnormal. The operation was done April 26, 1919. December 9 she gave birth to a full term child. Elliott concludes that there must, of course, have been a twin pregnancy—one fetus extra-uterine and one intra-uterine. The pregnancy probably began early in March.

Bulletin de l'Académie de Médecine, Paris

May 18, 1920, **83**, No. 20

*Precancerous Condition. G. Darier.—p. 464.
Lethargic Encephalitis. L. Bernard and others.—pp. 470, 474.

Precancerous Condition.—Darier refers to the chronic atypical epithelial proliferation described by Bowen, and urges that all the patches should be thoroughly excised as cancer is almost certain to develop in them. This dermatosis resembles in many respects Paget's disease of the nipple which, likewise, is usually followed by cancer. The dystrophy or dyskeratosis closely resembles epithelial masses in the cancers, which should be borne in mind in cancer research.

May 25, 1920, **83**, No. 21

*Resection of Posterior Arc of First Ribs. J. Boeckel.—p. 486.
Spring Girdle for Ptosis. De la Prade.—p. 489.
*Ipecac for Infants' Dyspepsia. Rousseau-Saint-Philippe.—p. 491.
Influence of Liver on Sero-Agglutination. Duhamel and Thieulin.—p. 492.

Resection of Posterior Arc of First Ribs.—Boeckel for twenty years has operated on high empyema from the back by severing the rhomboideus and the serratus magnus through a longitudinal incision in the trapezius, the incision in the skin curving around the posterior margin of the scapula. When these muscles are severed, the scapula can be easily pushed over toward the axilla, giving ample access to the posterior arc of the upper five ribs.

Ipecac for Infants' Digestive Disturbances.—Saint-Philippe gives systematically minute doses of tincture of ipecac to bottle-fed babies with digestive disturbances. He gives it by drops in progressive doses, aiming to act on the digestive juices, and on fermentation and putrefaction. The ipecac, he says, tones up the liver and secretion of bile.

Bulletin Médical, Paris

May 12, 1920, **34**, No. 25

Forms of Insufficiency of Aortic Valve. C. Achard.—p. 435.
*Erosions of the Anus. G. Durand.—p. 436.
*Insufficiency of the Kidneys. J. Génévrier.—p. 438.

May 19, 1920, **34**, No. 26

Bronchitis of Nasal Origin. H. Flurin.—p. 455.

Hemorrhagic Erosions in the Anal Canal.—Durand comments on the difficulty of diagnosing these erosions, which may be the source of severe hemorrhage and yet escape inspection, hidden in crevices, unless the proctoscope is used. This is advisable also to exclude cancer above. The erosions in question are capillary hemorrhoids, without visible dilatation of the vein. They should be touched with 1 per thousand silver nitrate or 1 per cent. chromic acid two or three times, at two or three days intervals, supplementing this by introducing a "gauze suppository" or roll of gauze coated with petrolatum medicated with zinc oxid, ichthyol or similar substance. This local dressing is renewed daily and the stools are kept soft. In the majority of cases this has always cured the erosions and thus the hemorrhages in two weeks. If not, the persistence of the hemorrhages justifies resection of the mucosa involved, but a trial might be made of the high frequency current.

Impaired Permeability of the Kidneys.—Génévrier warns the general practitioner that determination of the elimination of water, of chlorid and of nitrogen by the kidneys has no practical value unless the intake of each for three or four days beforehand is known, and the amount of urine voided for three or four days previously. The permeability for water is easily shown by the induced polyuria test, drinking 500 gm. water fasting and comparing the amount of urine voided during the two following hours with the amount on corresponding days before. The permeability for chlorids can be determined by the loss of weight when the intake of salt is restricted, and the gain in weight when salt is allowed again. The urea content of the urine throws very little light on the permeability of the kidneys for urea. For this, the urea content of the blood is the criterion, and he describes the simple means with which this can be ascertained with the ureameter after treating the serum with sodium hypobromite and phenolphthalein.

Bulletins de la Société Médicale des Hôpitaux, Paris

March 26, 1920, **44**, No. 12

*Meningococcus Septicemia. E. Sergent and others.—p. 428.
Myogenous Total Bradycardia. C. Laubry and A. Mougeot.—p. 436.
Lethargic Encephalitis. A. Netter and others.—p. 441; 446; 448; 450; 451; 459; 478; 479; 482.
Oculomotor Paresis with Parkinson's Disease. Laignel-Lavastine.—p. 458.
*Vaccine Therapy in Typhus. Monziols and Collignon.—p. 462.
*Alcohol in Cerebrospinal Fluid. E. Lenoble and others.—p. 465.
*Chloral in Idem. Idem.—p. 476.
*Erythema Nodosum and Tuberculosis. A. Gendron.—p. 475.

Meningococcus Septicemia.—The protracted meningococcus septicemia had no meningitis, and no benefit was apparent from serotherapy, but the woman of 32 showed a prompt turn for the better after a single intravenous injection of a stock vaccine containing 1 mg. of meningococcus *C* per c.c., and recovery progressed under three more injections. The pseudomalarial fever, arthralgias and papulonodular erythem might have been mistaken for gonorrhea if it had not been for cultivation of the germs from the blood on egg bouillon and ascites bouillon.

Vaccine Therapy of Typhus.—Monziols and Collignon report favorable experiences with a vaccine made from Proteus X_{19}.

Alcohol in the Cerebrospinal Fluid.—Lenoble states in this seventh report of his research on this subject that the presence of alcohol in the cerebrospinal fluid has pathologic significance only when it persists for more than twenty-four hours. It does not persist in this way unless the individual tolerance for alcohol has been surpassed. This threshold differs with different persons, but is never lower than 250 c.c. of absolute alcohol. The alcohol content of the fluid is of less import than its persistence; this was for eighteen days, seventeen days, seven days in experiences related by different writers. Nicloux's quantitative test is accurate enough, he says.

Chloral and Chloroform in Cerebrospinal Fluid.—Ingestion of chloral induced a positive reaction to the Nicloux test for alcohol in the cerebrospinal fluid. Chloroform did not induce the reaction.

Erythema Nodosum in the Tuberculous.—Gendron remarks that the three cases of erythema nodosum and one of a miliary eruption in different members of a tuberculous family, in his practice, confirm the connection between these conditions and tuberculosis.

Paris Médical

May 15, 1920, **10**, No. 20

*Diabetes from Syphilis of Pancreas. Carnot and Harvier.—p. 401.
*Coagulation of Spinal Fluid. M. Villaret and others.—p. 403.
Immediate Treatment of Wounds of Bladder. H. Costantini.—p. 407.
*Chart for Ambard Ureosecretory Index. Mazéres.—p. 409.

Diabetes from Syphilis of the Pancreas.—Carnot and Harvier summarize from the literature four cases in which diabetes developed in syphilitics, but necropsy showed only ordinary sclerosis of the pancreas. In a case from their own experience, however, a woman of 53 had been presenting symptoms of diabetes and of neurosyphilis for about two years. The pancreas was almost entirely transformed into a sclerogummatous mass. They believe this to be the first case to be recorded of diabetes from unquestionable syphilitic lesions of the pancreas.

Coagulating Spinal Fluid.—Massive coagulation with xanthochromia and hyperalbuminosis distinguished the spinal fluid in two cases reported. In one of them, by making the puncture at different heights, it proved possible to locate and treat the lesion responsible for the anomaly.

Chart for Ambard Formula.—Mazéres gives a nomograph with which the calculations for the Ambard coefficient are dispensed with. The values are determined by drawing a connecting line between figures in different columns.

Presse Médicale, Paris

May 19, 1920, **28**, No. 32

*Pneumococcus Infections in Infants. P. Nobécourt and others.—p. 313.

Pneumococcus Infection in Infants.—At the Paris Maternité during the last year all the infants and adults were systematically examined for pneumococci, with 55 per cent. positive results from 322 smears. Type III was found in 133 cases and was responsible for most of the infections. When a carrier of Type II had been admitted to the ward, it appeared almost at once in the other women and infants in the ward, and a train of infectious processes in the upper air passages followed. Isolation is especially important to guard infants against this contagion. The infant should be taken away from its mother if the latter becomes affected and be brought to her only to be nursed, and she should wear a veil while nursing the child. Screens and veils are not enough to protect an infant in the ward with others having the pneumococcus. Contagion by the dust as well as by droplets is to be feared. Antipneumococcus serum in treatment of pneumococcus pneumonia and pleurisy in infants and adults has made a very favorable impression, especially in three infants of 2, 4 and 5 months old. Prophylactic vaccination has been tried too recently for a decisive judgment, but others have reported excellent experiences with it. The data presented emphasize further the severity of pneumococcus infections in infants.

May 22, 1920, **28**, No. 33

*Reduction of Fractures. R. Baudet and F. Masmonteil.—p. 321.
Arsphenamin Responsible for Jaundice. P. Nicaud.—p. 322.
Copper Sulphate for Cancer of Vagina and Cervix. D. Pamboukis and G. Berry.—p. 324.
*Pepsin for External Application. L. Cheinisse.—p. 325.

Reduction of Fractures.—Baudet and Masmonteil expatiate on the perfect results obtained by stretching the limb in a long frame with pressure applied by turning a handle, just as a patent corkscrew pulls the cork out of the bottle by pressure on the neck of the bottle. A dynamometer is interposed between the foot and the turning handle and this allows the pressure to be graduated. The reduction by this means is gentle but complete, and it overcomes all tendency to muscular contraction. If reduction is not soon complete it shows that interposed tissue is preventing, and that operative intervention is imperative without further delay. Another advantage of this frame method is that any practitioner can apply the frame alone, without assistance. The article is illustrated.

External Application of Pepsin-Hydrochloric Acid.—Cheinisse reviews recent literature on the method of treating vicious scars, torpid ulcers, and keloid, and to promote absorption of drugs through the skin, by digesting the tissues with a mixture of 2 parts pepsin and 1 each of hydrochloric acid and phenol in 200 parts distilled water.

Schweizerische medizinische Wochenschrift, Basel

May 6, 1920, **50**, No. 19

*The Rôle of the Ovaries in the Organism. A. Labhardt.—p. 361.
Lethargic Encephalitis. O. Busse.—p. 368.
*Depilatories. L. Merian.—p. 369.
Perforation from Cancerous Stenosis of Colon. W. Odermatt.—p. 373.

Physiology and Pathology of the Ovaries.—Labhardt's long presentation of his subject aims to show the predominant importance of the ovaries not only for the genital system but for the whole organism. Gynecology is receding more and more from the conception of localized pathologic conditions. Instead of trying to treat the local process, it is the woman as a whole that has to be treated.

Depilatories.—Merian lauds the pumice stone method of curing hypertrichosis. He has recently seen a woman who had been relieved by this means twenty years ago of a very disfiguring growth of hair, and the skin looks normal in both color and texture. In very severe cases he prefers roentgen treatment, and has thus treated twelve patients with no injurious by-effects. For the pumice stone method he has the region rubbed first for from two to ten minutes with a strong soap, leaving the lather on for from five to fifteen minutes. It is then washed off, the region dried and the skin is then rubbed gently with a fine piece of pumice stone, twisting it a little, while the skin is drawn taut with the fingers of the other hand. Then the skin is treated with a cooling salve. This is repeated the next evening with another part of the skin, and so on, each part receiving the application in turn once in eight or ten days. Or the region can be rubbed with the finger dipped in pulverized pumice stone. The use of pumice stone for this purpose is mentioned in the Talmud.

May 13, 1920, **50**, No. 20

*Treatment of Edema. R. Isenschmid.—p. 381.
School Dental Clinics. Jessen.—p. 386.
Embryology of the Prostate. F. Chatillon.—p. 390.
Galvanometer Dosimeter for Roentgen Rays. J. Iten.—p. 393.
Masks in Prophylaxis of Influenza. A. Josefson.—p. 395; Idem. Lauterburg.—p. 395.

May 27, 1920, **50**, No. 22

Diphtheroid Bacilli. W. Loewenthal.—p. 421.
Pitchfork Severs Optic Nerve Through Nose. J. Strebel.—p. 424.
Compensation After Loss of One Eye. E. Ammann.—p. 426.
Colloidal Silver in Female Gonorrhea. H. Koller.—p. 428. Conc'n.

Influence of Diet on the Water Content of the Body.—Isenschmid remarks that it is hard to conceive that, aside from the skeleton, three fourths or four fifths of this body with which we digest and think consists of nothing but water. Drinking of water does not modify the water content of the body. Its direct dependence on the diet has been emphasized anew by the undernutrition edema reported from various points during the war. It could be cured by giving a more nutritious diet or by repose without change of diet, the repose restoring the balance between the intake and the expenditure of energy. In some cases the edema subsided under merely moving the patients from a cold room to a warm room. There is no need for organotherapy, although the success of some with thyroid and testicle extract is interesting.

The lack of milk in certain countries during the war, prevented the Karell treatment of heart disease, and led to the use of substitutes which, he says, surpassed the effect of the original Karell method in many cases. Brilliant results have been obtained by some physicians with it: Only 1 liter of water or fruit juice is allowed for the beverage, and 1 kg. of potato, cooked without salt, is taken during the day in five portions. A banana cure has also proved effectual, taken in the same way. These and the Karell cure are poor in salt, and the small portions and absence of metabolic waste and small intake of fluid make very little demands on the digestive system and kidneys. The potassium in the potato is another favorable factor. Isenschmid's own experience testifies that restriction of albumin and of fluid and of salt is more effectual in the dropsy of heart disease than restriction of salt alone. One patient with extreme edema, rebellious to the Karell cure plus digitalis, lost in eleven days

16 kg. water on a diet of 5/4 liter milk; 200 gm. bread; butter, and two or three eggs. In some cases it is better to reduce the intake of fluids to 800 c.c. The edema following dysentery and other protracted wasting infectious diseases is usually ascribed to weakness of the heart, but it is more probable that it is of the starvation edema type. Other known factors may be concerned, but to date, a diet conforming to the above principles seems to offer the best prospects for the cure of edema.

Policlinico, Rome

April 26, 1920, **27**, No. 17

Sarcomatous Mediastinopericarditis. F. Schupfer.—p. 475.
*Calculi in the Pancreas. G. Apolloni.—p. 482.
*Unusual Form of Thyroiditis. M. Fasano.—p. 484.

Calculi in the Pancreas and Diabetes.—In the case described by Apolloni the young woman had been presenting symptoms of diabetes for a year and the pancreas was found 12 cm. long, with nothing left but a shell crowded with sand and calculi. The extreme hemosiderosis in the liver was a further necropsy surprise. Marchiafava has reported a case in which compression of the bile duct by calculi in the pancreas proved fatal, but there was no glycosuria.

Unusual Form of Thyroiditis.—Fasano released pus and necrotic scraps by incision of the thyroid, the seat of a sudden inflammatory process in the previously healthy young married woman. Besides the chills, fever and pain from the acute thyroiditis, she developed in the two weeks the complete picture of mild exophthalmic goiter with the three cardinal symptoms, but the Stellwag and Graefe signs were negative. After the incision the thyroiditis subsided and with it the exophthalmic goiter symptoms. The destructive process had acted like a thyroidectomy.

May 3, 1920, **27**, No. 18

*Intradermal Reaction in Diagnosis of Echinococcosis. P. Luridiana.—p. 499.
Arteriovenous Aneurysm of the Subclavian. U. Benedetti.—p. 503.
Prophylactic Welfare Work for Children. A. Prati.—p. 505.

May 17, 1920, **27**, No. 20

Aphasia. F. Sorrentino.—p. 547.
Iodin in Abortion of Furuncles and Carbuncles. D. Pacieri.—p. 549.
Physical Training in the Schools. G. Monti.—p. 551.

Intradermal Reaction in Echinococcus Disease.—Luridiana injects into the derma 0.33 or 0.5 c.c. of fluid from a hydatid cyst, and in case of a positive reaction redness and swelling follow for twenty-four hours or several days. Casoni uses hydatid cyst fluid from cattle or guinea pigs, adding a drop of phenol to each 20 c.c. filtering, and keeping on ice, renewing the supply each month. Six cases are described with operative control in three and clinical confirmation in the others. In one case there were numerous small recent cysts and the reaction was only faintly positive after a negative response at the first test. In another case the reaction was negative but a large echinococcus cyst was removed from the spleen. Its walls were unusually tough, extremely resistant to the knife, and this probably prevented any passage of the toxin into the blood so that there was no sensitization. The reaction was always negative in other pathologic conditions.

Riforma Medica, Naples

April 24, 1920, **36**, No. 17

Congenital Cysts of the Neck. L. de Gaetano.—p. 401.
Case of Symmetrical Cervical Ribs of Unusual Size. S. Livierato.—p. 404.
*Rebellious Salivary Fistulas. L. Stropeni.—p. 405.
The Milk Teeth and the Development of the Face. C. d'Alise.—p. 408.
Operative Correction of Uterus Displacement. E. Aievoli.—p. 410.

Cure of Rebellious Salivary Fistula.—Stropeni blocked the third branch of the trigeminal nerve by injecting alcohol, and this proved as successful in curing the incessant flow of saliva from a fistula leading into the parotid gland as resection of the auriculotemporal nerve which Leriche and others have found promptly effectual. He injected 3 c.c. of alcohol at the base of the skull, corresponding to the foramen ovale, and repeated this nine days later. The fistula kept on suppurating, but there was no further secretion of saliva in that gland.

Semana Médica, Buenos Aires

Jan. 29, 1920, **27**, No. 5

McDonagh's Leucocytozoon Syphilidis. Matheu and Rojas.—p. 145.
Vaccine Therapy of Diphtheria. P. Santillán.—p. 160.
Vaginal Cesarean Section with Placenta Praevia. T. J. González.—p. 167.
*Syphilis and Tuberculosis. E. E. Mariño and J. C. Mussio Fournier.—p. 170.

Feb. 5, 1920, **27**, No. 6

An Argentine Hookworm: Necator Argentinus. S. E. Parodi.—p. 177.
Cysts in Coccyx-Sacrum Region. A. Zeno and A. Boden.—p. 181.
Vaccine Treatment and Prophylaxis of Tuberculosis. F. Gómez Alvarez.—p. 183.
Our Present Knowledge of the Gastric Juice. P. J. Pando.—p. 187.
Diseases of Orbit and Eyeball. R. Argañaraz.—p. 196.
The Public Health and Hospital Service in Colombia. E. R. Coni.—p. 207.

Syphilis and Tuberculosis.—Mariño and Mussio state that they have sometimes obtained surprisingly favorable results in treatment of tuberculous patients when tentative treatment for syphilis was given to supplement the usual measures. Even where there is nothing to suggest syphilis, asthenia, status lymphaticus or other endocrinopathy may be manifestations of an inherited or acquired taint, and justify mercurial or other treatment with small doses. This is liable to be of inestimable value when the parents are robust and free from lead poisoning, malaria, etc., which might have affected their offspring, the probability of inherited syphilis as responsible for the endocrinopathy in such conditions being particularly evident.

April 15, 1920, **27**, No. 16

*Origin and Prophylaxis of Cancer. E. Cisneros.—p. 513.
Prophylaxis of Tuberculosis in Rosario District. J. B. Valdés.—p. 527.
Treatment of Influenza. J. A. López.—p. 535.

Origin of Cancer.—Cisneros insists that cancer is merely a local biologic reaction to a foreign body of organic composition, some mass of fibrin or other proteic material that has accumulated by precipitation at some point during a period of lessened vitality, asthenia or depression from any cause. The accumulated mass impedes the circulation, and the system is too depressed to get rid of it in the usual way, but the local tissues react to it with tumor production. He cites as an instructive example of this sequence of events the case of young Dr. Cianci who developed a sarcoma in the mediastinum while under the depression from a rebellious and progressing radiodermatitis. The shock from the operations required, according to Crile's theory, having further exaggerated the depression.

Siglo Médico, Madrid

March 27, 1920, **67**, No. 3459

*Pancreatic Infantilism. C. S. de los Terreros.—p. 221.
Lethargic Encephalitis. E. Fernandez Sanz.—p. 223. Conc'n.
Biology and Feminism. G. Marañón.—p. 226. Conc'd in No. 3461.—p. 265.

April 3, 1920, **67**, No. 3460

Transplantation in Surgery. Goyanes.—p. 241. Conc'd in No. 3463, p. 304.
Renal Calculi. A. Pulido Martin.—p. 244. Conc'd in No. 3461, p. 267.

Pancreatic Infantilism.—De los Terreros refers to backward growth from insufficiency of the pancreas. The literature records few instances of this, but he has encountered it in a number of children. The pancreatic insufficiency does not entail diabetes in children, although certain features of the metabolism resemble those of diabetes in adults, and transient alimentary glycosuria is common in children. His experience has convinced him that the pancreas probably has three hormones, one serving for carbohydrate metabolism, one for the interglandular control of growth and development; the third forms the active element in the pancreatic juice. In children, insufficiency of the two last mentioned hormones will check normal digestion and also check normal growth, while the carbohydrate metabolism may proceed normally or with only minimal glycosuria and acetonuria. A child with pancreatic insufficiency begins to lose weight; acetone and preacetonic bodies are thrown off in the urine and the thyroid, freed from the pancreas hormone, functions to excess. There is usually a tendency to adenoids, pathologic tonsils, mononucleosis and often leukopenia; the resisting powers are low, and the children contract disease easily.

Deutsche medizinische Wochenschrift, Berlin

April 15, 1920, **46**, No. 16

Physiologic and Pathologic Significance of Ion Balance. Höber.—p. 425.
*Simplification of Kjeldahl's Method. A. Hahn.—p. 428.
*Permanganate Tests of Urine and Sputum. M. Weisz.—p. 429.
Inflammation of Meckel's Diverticulum in Hernia. W. Budde.—p. 430.
*Death Late after Skull Wounds. H. Weise.—p. 431.
*Duodenal Ulcers. F. Mendel.—p. 433. Conc'd in No. 17, p. 458.
Ascending or Descending Infection in Tuberculosis of the Male Genital Organs. C. Kraemer.—p. 435.
Rhinologic Hints for General Practitioner. Finder.—p. 436. Cont'n.

A Simplification of Kjeldahl's Method; Especially for Estimation of Residual Nitrogen.—Hahn describes in detail his modification of the Kjeldahl method for the estimation of nitrogen, which is far simpler and takes much less time than the original method.

Potassium Permanganate in Examination of Urine and Sputum.—Weisz states that he has found still further uses for potassium permanganate in examination of urine. He says that the test for urochromogen proved particularly valuable during the war, and he describes another potassium permanganate test, which differentiates uric acid precipitates from phosphates or albumin. He also gives his method of contrast staining of sputum by means of potassium permanganate in examination for tubercle bacilli, which shows them up exceptionally clearly. The urochromogen test can be used as well for detection of bilirubin, the diluted urine becoming decolored when the 1 per cent. solution of the permanganate is added, instead of the yellow tint with urochromogen. These two substances are so rarely associated that the findings do not conflict. Uric acid causing turbidity in urine is rapidly destroyed on addition of the 1 per cent. solution of the permanganate. This differentiates turbidity from uric acid in urine or any fluid, with or without preceding treatment with acetic acid. The uric acid disappears and the fluid becomes clear on addition of the permanganate.

Death Late After Skull Injuries.—Weise summarizes several cases to show that skull injuries are always to be regarded as serious and that the prognosis remains uncertain for several years. Even two or three years later, frequently, and often quite suddenly, while the patients are subjectively well, meningitis, encephalitis or brain abscess, or a combination of these, may develop and end fatally.

Medical Treatment of Duodenal Ulcer.—Mendel states that in all cases of duodenal ulcer, just to the right of the linea alba, slightly below the midline between the costal arch and the umbilicus, there is a tender spot, usually the size of a 50 cent. piece, or possibly a little larger, which is painful on the slightest percussion, whereas just outside of this area even sharp blows cause no pain. This tender spot grows smaller as the ulcer heals and decreases in size, and it disappears when the ulcer is cured. The reason internal therapy so often fails is that it is not begun promptly. Mendel has successfully treated considerably over 100 cases of duodenal ulcer during the past twenty years with no recurrence in the overwhelming majority. He demands absolute rest in bed for from four to six weeks, even in mild cases, and advises the constant and intensive use of hot moist compresses. At night a Priessnitz compress is ordered. The patient is restricted at first to a milk diet. When the spontaneous pains have decreased and the tender spot as shown by percussion has grown smaller, the diet may be extended so as to include zwieback, potato soup (the potatoes to be passed through a sieve), and finally mashed potatoes, with plenty of butter. Rest and diet are the main factors in the treatment, while the moist heat serves to lessen the irritability of the gastric mucosa. As a rule, the chyme is hyperacid and irritates the surface of the ulcer and causes spastic contractions of the stomach. To neutralize this hyperacidity, Mendel has used for twenty years the following prescription: dried sodium sulphate, 30 parts; dried sodium phosphate, 30 parts; sodium bicarbonate, 40 parts; one teaspoonful, dissolved in a wineglass of water, to be taken four times a day before meals. He emphasizes the importance of the sodium phosphate in this treatment, as it has a regulating and sedative influence on the overexcitable vegetative nervous system which is an important factor in the vicious circle with duodenal ulcer.

Medizinische Klinik, Berlin

April 4, 1920, **16**, No. 14

*To Ward Off Acute Effects of Arsphenamin. W. Kolle and others.—p. 355.
Give Antitoxin in All Severe Cases of Diphtheria. C. Schöne.—p. 359.
Electrolysis for Hypertrichosis. E. Eitner.—p. 361.
Rupture of Aorta in Tuberculous Patient. Kornitzer.—p. 361.
Fleeting Edema from Naphthalin Fumes. F. Rosenberger.—p. 363.
Pathology and Heredity in Plants; Conclusions for Comparative Pathology. C. Correns.—p. 364.

Means of Avoiding Acutely Fatal Effects of Arsphenamin Administration.—Kolle, Schlossberger and Leupold found from experiments conducted with mice that the intravenous injection of small doses of silver salvarsan furnished perfect protection against the injection of an absolutely fatal dose of the same preparation twenty-four hours later. This experiment agrees with the results of Danysz' observations on rabbits. These investigations furnish an experimental basis for the clinical custom of giving syphilitics who are especially sensitive to intravenous injections of arsphenamin very small doses at the start.

April 11, 1920, **16**, No. 15

Rachitis in Relation to Backward Growth. S. Engel.—p. 383.
*Deep Subpectoral Lymphadenitis. H. Schum.—p. 386.
Parenteral Injections of Milk in Latent Infections. Stracker.—p. 388.
Silver Salvarsan and Biologic Aspects of Syphilis in Man. E. Delbanco and F. Zimmern.—p. 390.
Combined Roentgen and Potassium Iodid Treatment of Superficial Actinomycosis. R. Dittrich.—p. 394.
Modern Theories of Life. S. Gutherz.—p. 396.

April 18, 1920, **16**, No. 16

Cause and Origin of Abdominal Pains. M. Kappis.—p. 409.
Successful Removal of Large Tumor from Occipital Lobe. R. Cassirer and E. Heymann.—p. 412.
Lethargic Encephalitis. Hilgermann and others.—p. 415.
Outcome with Fractures of Humerus and Femur. Marconi.—p. 418.
Polyuria Following Subcutaneous Injections of Tuberculin. C. Stuhl.—p. 420.
Atrophy of the Hypophysis. H. Feit.—p. 421.

Lymphadenitis Deep in Chest.—Schum finds that acute subpectoral lymphadenitis presents very characteristic symptoms, occurs rather frequently, possesses considerable importance for the surgeon, and that the prognosis is always serious even when recognized early and properly treated. Sometimes diagnosis is difficult so that a general medical disease process is assumed when in reality there is a well localized process requiring immediate surgical intervention. Occasionally contracture in abduction of the arm, and the superficial breathing will give the clew that will localize the suppurating process. Early operative treatment is indicated even though there may be some doubt about the diagnosis. At times a test incision is advisable.

Münchener medizinische Wochenschrift, Munich

April 2, 1920, **67**, No. 14

*Pathogenesis of Peptic Gastric Ulcer. S. J. Haeller.—p. 393.
Residual Nitrogen Content in Human Tissues. E. Becher.—p. 397.
Capillary Attraction in Bacteriology. Friedberger and Putter.—p. 398.
Seasonal Variations in Response to Tuberculin. Hamburger.—p. 398.
The Sachs-Georgi Reaction in Blood and Spinal Fluid. W. Schönfeld.—p. 399.
Comparison of Wassermann Reaction, the Stern Modification and the Sachs-Georgi Reaction. W. Hinzelmann.—p. 402.
Local Destructive Action of Pepsin-Hydrochloric Acid Mixture on Scar Tissue. W. Patzschke.—p. 402.
*Periesophageal Abscess from Foreign Body. H. Herzog.—p. 404.
The Cone of Rays Phantom for Rapid Estimation of Dose in Deep Roentgen Treatment. Lehmann.—p. 405.
Necessity for Control of the Electric Factors in Roentgen Treatment. F. Voltz.—p. 406.
The Anatomic Forms of Pulmonary Tuberculosis. A. Schmincke.—p. 407.

Pathogenesis of Peptic Gastric Ulcer.—On the basis of experimentation with rabbits, Haeller has reached the conclusion that the ulcers produced in rabbits' stomachs by means of large doses of pilocarpin are not the result of muscle spasms. However, he admits that if the essential preconditioning factors are already present, severe spastic contractions of the stomach may favor ulceration.

Periesophageal Abscess from Foreign Body.—Herzog emphasizes the danger of endeavoring to force a foreign body in the esophagus downward, owing to the likelihood of damaging the wall of the esophagus as in the case reported. He advises even against the swallowing of bulky food with

the idea of exerting pressure on the foreign body. Such measures are likely to cause severe peristaltic movements and vomiting, whereby points and jagged edges of the foreign body may be driven into the wall of the esophagus, entailing perforation; or, if the body is pushed downward, it may cause new lesions in lower segments of the esophagus, so that in place of one injury a series of injuries may result. Immobilization of the esophagus is indicated from the moment that the foreign body enters it. Esophagoscopy should be resorted to at the earliest possible moment. Codein and belladonna will render good service until the patient can be given a direct examination. The subjective symptoms are often misleading. There may be no pain in spite of the presence of a foreign body; then, again, severe pain may be present although the foreign body has already passed through the esophagus. Esophagoscopy is, therefore, the only rational procedure; this does away with guess work and prepares the way for the proper therapy.

April 9, 1920, 67, No 15

*Practical Results of Cineplastic Prostheses. F. Sauerbruch and A. Stadler.—p. 417.
*The Sachs-Georgi Test. G. Wodtke.—p. 419.
*Parallel Wassermann and Sachs-Georgi Tests. T. Baumgärtel.—p. 421.
Results of Linser Treatment of Syphilis. G. Bruck.—p. 423.
*Traumatic Emphysema from Foreign Body in Trachea. H. Herzog.—p. 424.
*Internal Use of Iodin in Coryza and Angina. J. Finck.—p. 426.
Apoplectiform Symptoms of Menières' Disease, Without Disturbance of Hearing, Following Influenza. A. Bittorf.—p. 427.
Mediastinal Dulness in Influenza. A. Kirch.—p. 427.
Lethargic Encephalitis in Eleven Weeks Infant. A. Hirsch.—p. 428.
Edibility of Beans of Phascolus Lunatus. H. Fincke.—p. 428.
Roentgenologic Laboratories and the Gas Famine. E. Mühlmann.—p. 429.
Predetermination of Sex. P. W. Siegel.—p. 430.

Cineplastic Operations on Amputation Stumps.—Sauerbruch and Stadler report that they now have a record of 1,500 cases in which tendon and muscle loops, tunnels, etc., have been made in the stump to actuate artificial hands, and 1,200 of the men have already been provided with prostheses. Most of the men can lift weights up to 10 or 25 kg., raising them for 3 or 5 cm. A recent improvement is to take the skin flap, to line the loops, etc., from the abdominal wall. It has been found possible also to utilize muscle power from the muscles of the chest. The details of the cineplastics are described, but without illustrations. They say that the success that is being realized at the Munich and Singen centers for this work is converting the skeptical, and demonstrating the advantages of the artificial arm devised by Sauerbruch, and especially what is called the Singen model.

The Sachs-Georgi Test.—Wodtke states that the sensitiveness of the Sachs-Georgi precipitin reaction can be increased by the use of double the usual amount of serum. Some serums, however, react with the usual quantity of serum more sharply than with double the quantity. By using both the usual and the double amount of serum, an increased number of positive results can be obtained without detracting from its diagnostic significance, so far as Wodtke's experience extends, although some have feared such result. By the use of several different extracts a higher degree of sensitiveness may be secured; besides cholesterin-fortified extract of beef heart, cholesterinized extract of human heart may also be used.

Comparison of Results with the Wassermann and the Sachs-Georgi Tests in Syphilis.—Baumgärtel reports that according to the observations of various authors in 25,000 parallel blood examinations and in 7,000 parallel tests of his own, the results by the Wassermann and the Sachs-Georgi reaction agree in about 90 per cent. of the cases. In using the Sachs-Georgi method he recommends that the reaction be taken solely at the incubator temperature. The results should be noted not only after twenty-four hours, but also after two and forty-eight hours' heating of the test tubes at 37 C. In this manner a certain number of cases of syphilis that are atypical from a serologic standpoint will be discovered.

Traumatic Emphysema from Foreign Body in Trachea.—Herzog reports a case in which the first paroxysm of coughing that followed the entrance of the foreign body (a portion of a prune pit) in the trachea seemed to have brought about the traumatic injury of the lung tissue resulting in interstitial emphysema, which appears to be a very unusual occurrence. The patient, a girl, 1 year old, died following tracheotomy.

Internal Use of Iodin in Coryza and Tonsillitis.—Finck gives a preliminary report of his experience with the prophylactic and therapeutic use of iodin in acute infectious conditions in the upper air passages. The iodin does not suffice to kill the bacteria, but seems to prevent their further development. Either the nutrient medium is unfavorably affected for the growth of the bacteria or the iodin exerts a direct damaging effect on the bacteria themselves. He uses iodin in a 10 per cent. solution of potassium iodid (purified iodin, 0.3 gm.; potassium iodid, 3 gm.; distilled water, 30 gm.). For children up to 10 years of age the dose is 5 drops; for older children and adults, 8 drops; for stout or heavy-set persons, 10 drops, in a quarter of a glass of water; a half a glass of water to be drunk afterward. For prophylactic purposes he prescribes one dose daily, to be taken at the first signs of infection. In some of the severe cases the prophylactic dose may not suffice, in which case two therapeutic doses, one two hours after breakfast and one before going to bed, are recommended. The dosage must never be increased, as iodism with coryza would result. Recovery should follow in from two to three days. A single dose should then be continued for ten days.

April 23, 1920, 67, No. 17

*Physical Training in the Universities. Gruber.—p. 473.
*Report of the Cologne Salvarsan Commission. Meirowsky.—p. 477.
The Pharmacology of Tuberculin. F. Hamburger.—p. 480.
*The Mastic Reaction. W. Schönfeld.—p. 482.
*Barbital As Adjuvant in Morphin Withdrawal. Hornung.—p. 484.
Important Source of Error in Testing Urine for Albumin with Sulphosalicylic Acid. Grete Lasch and J. Reitstoetter.—p. 484.

Physical Training in the Universities.—Gruber discusses the need of more systematic physical training in German universities now that universal military training is a thing of the past. While the youth of the land need to be well trained physically, there is some danger of overdoing the matter, and allowing sport to assume too much of a professional aspect, of which there were signs even before the war.

Committee Report on Mishaps with Salvarsan.—Meirowsky, secretary of the committee appointed by the Allgemeiner aerztlicher Verein of Cologne, publishes a report of its work. In preparing the statistics on the number of deaths resulting from arsphenamin therapy, 225,780 injections of arsphenamin, neo-arsphenamin and arsphenamin sodium were considered. The number of deaths resulting totaled 20, one fatal case for every 11,289 injections; 12 deaths were designated as certainly due to arsphenamin treatment, 5 as questionable, and 3 as indirectly due to arsphenamin. All deaths from encephalitis following arsphenamin treatment were set down by the commission as certainly due to arsphenamin. On the basis of its investigations the commission recommends that the maximal dose for men be placed at 0.6 gm. and for women at 0.45 gm. It recommends further that manufacturers be prohibited from putting up larger single doses than these. One instance of jaundice was recorded for each 5,000 injections: one in 2,000 for old salvarsan and one in 6,000 for neosalvarsan. With the latter it was generally tardy, and it was most frequent in the tertiary stage. Injury of the skin was recorded in 48 cases, including 5 that terminated fatally. Of this number, 37 of the cases and 3 of the deaths must be attributed to the medication, as also the 15 cases of neurorecurrence.

The Mastic Test.—Schönfeld describes his modification of the Emanuel-Cutting mastic test to apply to the cerebrospinal fluid. The findings coincide with those of the Wassermann reaction only when there are pronounced specific changes in the spinal fluid, such as are found in syphilis of the brain and in general paresis. He says that the mastic reaction, therefore, cannot be considered as a substitute for the Wassermann reaction. It is interesting from a theoretical standpoint, but clinically its diagnostic value is no greater than that of the Pándy, Weichbrodt and other reactions.

Barbital as an Adjuvant in Morphin Withdrawal.—Hornung has found barbital useful in combating withdrawal symptoms in the treatment of morphin addicts and describes in detail his method of using it. The advantage is that the patient is kept in a more cheerful frame of mind during treatment.

Wiener klinische Wochenschrift, Vienna

April 15, 1920, **33**, No. 16

The 1920 Epidemic of Lethargic Encephalitis. C. Economo.—p. 329.
*Pathology of Angina. J. Fein.—p. 332.
*Effects of Carbid on Human Skin. O. Sachs.—p. 333.
Influenza Epidemic of 1918. F. Raffelt.—p. 334.
*Intermittent Course of Gastric and Duodenal Ulcer. E. Schütz.—p. 336.
Periodicity of the Symptoms of Gastric and Duodenal Ulcer. F. Mandl.—p. 337; Idem. F. Brunn and others.—p. 338.

Pathology of Sore Throat.—Fein says that the inflammatory process associated with sore throat is very rarely confined to any single part of the faucial ring; unilateral sore throat does not occur. The entire system of lymphoid structures becomes affected all at once. Contrary observations are due to wrong conceptions and to the fact that secondary factors attract the most attention. He suggests the term "anginosis" in place of "angina," as it marks better a general infection, such as sore throat undeniably is. Infectious sore throat and the so-called complications in other parts of the body are simply manifestations of one and the same infection, and are not to be regarded as cause and effect. The phenomena observed can be explained only by assuming an endogenous infection by way of the blood or lymphatics. Other things being equal, the intensity of the local inflammatory process depends on the size of the mass of tonsil substance. The less substance there is, relatively, the less there is to become involved, and the shorter will be the course of the inflammatory process.

Effects of Carbid on Human Skin.—As prophylactic measures for those who are handling carbid, Sachs recommends that gloves be worn and that petrolatum be rubbed into the hands, following which they should be powdered with talcum.

The Intermittent Course of Gastric and Duodenal Ulcer.—Schütz regards the periodicity of the symptoms of duodenal ulcer as a characteristic feature of great value in its differential diagnosis. The attacks in duodenal ulcer are not only periodic, but they occur mainly during the cold season, or at most during the spring and fall, whereas symptoms from gastric ulcer appear at irregular intervals. The cause of this different behavior is not known. The condition of the patient during the remission in the two disease processes varies widely; with duodenal ulcer the patients are often entirely free from subjective symptoms, whereas with gastric ulcer dyspeptic symptoms very frequently persist during the periods of remission. This is one of the main reasons why formerly duodenal ulcer was often mistaken for a gastric neurosis. The supposition is that gastric ulcer is more exposed during digestion to mechanical and chemical insults than is the duodenal ulcer.

Zentralblatt für Chirurgie, Leipzig

May 29, 1920, **47**, No. 22

*Osteochondritis Deformans of the Hip Joint in the Young. H. Sundt.—p. 538; Idem. H. Waldenström (Stockholm).—p. 539; Idem. G. Perthes.—p. 542.
Compression of Commission Bile Duct by Retroduodenal Tumor. Recovery after Removal of Tumor. A. Brentano.—p. 547.

Osteochondritis Deformans of the Hip Joint in the Young.—Sundt ascribes the priority in the description of this "obscure affection of the hip joint" to Legg and Calvé, and proposes to call it malum coxae Calvé-Legg-Perthes. Waldenström reproduces his published description of it a year before Legg's article. Both writers protest against calling it osteochondritis as there is no inflammation. Waldenström urges to call it "coxa plana," in analogy to coxa vara and coxa valga. The special characteristic is the flattening of the head, as weight bearing crushes it flatter when nutritional disturbance has interfered with its proper development. This term, coxa plana, leaves the question of the etiology untouched. It can be supplemented by the descriptive terms, traumatic, tuberculous, hypothyroid, etc.

Perthes, on the other hand, persists in advocating the name osteochondritis deformans juvenilis as this classes it with osteochondritis dissecans of the knee joint, both the result of nutritional disturbance from impeded circulation from some cause. He cites a number of instances of its bilateral development, which suggest that besides trauma, more general disturbances may be involved in the etiology. Several have observed a familial tendency, and he describes a case in which the hip joint affection was evidently an after-disturbance causally connected with an acute infectious disease, acute febrile rheumatism, in the girl of 8. The flattening of the head of the femur did not become evident until eight months later, although the child began to limp a month after the febrile rheumatism. Probably, he remarks in conclusion, a number of causes may be responsible for the obstruction of the superior artery of the neck of the femur. (Legg has called the affection osteochondral trophopathy of the hip joint. Among the articles on the subject published in THE JOURNAL were Freiberg's, Aug. 26, 1916, p. 658, and Blanchard's, Sept. 29, 1917, p. 1060.)

Zentralblatt für innere Medizin, Leipzig

April 17, 1920, **41**, No. 16

*Slow Septic Endocarditis. E. Münzer.—p. 282.

April 24, 1920, **41**, No. 17

Effect of the War on Denmark and Switzerland. G. Rosenfeld.—p. 305.

Slow Septic Endocarditis.—Münzer, after having published an article on this subject twenty years ago, now takes up the subject again and treats it in the light of recent investigations and observations. In the majority of cases *Streptococcus viridans* is responsible, but in a few cases it may be *Streptococcus lanceolatus*. For the differential diagnosis only the bacteriologic blood test is decisive. The mere presence of streptococci in the blood of patients suffering from endocarditis does not justify any prognostic conclusions, except from the number of the bacteria. Chills and enlargement of the spleen are signs of very bad import. In all cases of septic endocarditis, diagnosed early as such by blood examination, a streptococcus antiserum should at first be tried. If that fails, intravenous arsphenamin treatment should be considered. As a last resort, splenectomy may be indicated.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Dec. 27, 1919, **2**, No. 26

*Accessory Pancreas. P. Nieuwenhuijse.—p. 2106.
Urethral Polyps. G. O. E. Lignac.—p. 2114.
*Progressive Perichondritis. J. F. O. Huese.—p. 2120.

Accessory Pancreas.—A supplementary pancreas is usually merely a necropsy surprise, but it may entail clinical disturbances during life. Scagliosi incriminates it as a factor in duodenal ulcer in certain cases. He found aberrant pancreas tissue in the wall of two ulcers, and de Jong found the same in the hypertrophied tissue of stenosis of the pylorus. Hulst found an accessory pancreas in the wall of an intestinal diverticulum. To date, Nieuwenhuijse says, there is no authentic instance of aberrant pancreas tissue being found in a malignant tumor. In a personal case of which he gives illustrations, the aberrant pancreas tissue formed a bunch under the mucosa of the stomach above the pylorus. The macroscopic picture suggested cancer, but the microscope refuted this.

Progressive Perichondritis.—In Huese's case the inflammatory process was in the costal cartilages of the man of 53. It started with an abscess close to the perichondrium of the eleventh rib and soon involved the stomach wall and spread right and left and up and down, skipping the ribs, the man dying of cachexia. Only two analogous cases are on record, he says.

April 3, 1920, **1**, No. 14

Action of Bile and Bile Salts on the Principal Digestive Ferments. J. Temminck Groll.—p. 1157.
*The Calcium Level in the Blood. Stheeman and Arntzenius.—p. 1168.
*Extramembranous Pregnancy. G. C. J. A. Bol.—p. 1177.

Importance of the Calcium Content of the Blood.—Stheeman and Arntzenius state that the calcium content in the

blood may be high in rachitis, and thus mask the actual calcium deficit in the tissues, but the latter is disclosed by the Erb sign. Whenever the motor nerves display excessive irritability in response to electric tests, there is calcium deficit, regardless of the calcium level in the blood at the moment. It is evident, therefore, they say, that there is more than one kind of calcium in the blood, a biologically efficient and a nonefficient kind, one for growth and one for metabolic processes. When phosphorus and cod liver oil are given, the level of the calcium in the blood begins to rise in ordinary conditions, but with rachitis the exact reverse occurs: The calcium content of the blood declines as the calcium in the blood and from food is diverted to the bones. The proportion of inactive calcium grows less, and the level of total calcium in the blood falls. Then gradually, as conditions right themselves, the calcium content of the blood rises anew. This definite rise is constantly observed as the child throws off the rachitis and the Erb and the Chvostek signs are no longer apparent. In the absence of both of these signs, calcium impoverishment is scarcely probable. In conclusion, they reiterate the importance of estimation of the calcium content of the blood. It is even more important than research on the calcium metabolism, as the calcium balance does not indicate whether there is calcium impoverishment or calcium abundance. The calcium content of the blood, however, combined with electric tests of the peripheral nerves permits continued oversight of conditions. (See abstract of their preceding article, July 3, p. 71.)

Extramembranous Pregnancy.—Attempts to induce abortion at the third month were evidently responsible for the extramembranous development of the fetus. It was delivered naturally at term, but had multiple deformities and died soon after birth.

Hospitalstidende, Copenhagen

May 5, 1920, **63**, No. 18

*Differentiation of Exudates and Transudates. R. B. Larsen and K. Secher.—p. 273.
Influenza. S. T. Sørensen.—p. 279. Conc'd in No. 19, p. 289.

To Distinguish Exudates from Transudates.—Larsen and Secher commend, as very reliable, Sochanski's technic for this purpose. It never failed in the thirty-eight cases tabulated. The reagent is made with 1 c.c. each of a 1 per cent. solution of phenolphthalein and of tenth-normal solution of sodium hydroxid to which double distilled water is added to a total of 100 c.c. To 9 c.c. of this fluid is added a drop of the fluid to be tested. The reagent was always decolored when the fluid was an exudate while the tint remained unchanged with the transudates. The reaction can be made more sensitive by using lesser amounts of the reagent. The findings are more reliable than with determination of the albumin with other tests of the kind, as is shown by the parallel findings with a titration and other tests.

May 12, 1920, **63**, No. 19

*Electric Conductivity of Solutions. J. Christiansen.—p. 297.

To Determine the Electric Conductivity of Solutions.—Christian uses a U shaped tube. For 7 cm. at each end, the diameter is 7 mm. Below this the lumen narrows to 1.8 mm.; the length of this capillary portion forming the loop of the U is 32 cm. The tube is introduced into the electric current, a wire running down into each end of the tube a short distance, the tube filled with the fluid to be tested. The street current can be utilized, interposing a voltmeter recording up to 220 volts, corresponding to a resistance of 3,000 ohms. The reading is made by merely turning on the current and watching the voltmeter. The higher the figure it records, the less the resistance offered by the fluid, that is, the greater its conducting power. To keep the temperature even throughout, the U tube stands in a cylindrical glass full of water at 18 C. (64 F.). He gives an illustration of the U tube and also of a modification of it to use when only a very small amount of the fluid is available, and says that when it is a question of determining the total amount of salts in the urine, this is the simplest of all tests for the purpose. It might also be used to determine the amount of free hydrochloric acid in the stomach content. The method can be used also to test the segregated urine from the two kidneys; in health the conductivity is practically the same in both.

Hygiea, Stockholm

April 30, 1920, **82**, No. 8

Influenza at Sahlgren Hospital. C. A. Wällgren.—p. 257.
*Serotherapy of Ulcus Molle. J. Reenstierna.—p. 270.

Serotherapy of Chancroid.—In Reenstierna's case the infection with ulcus molle was of thirteen months' standing, and had proved refractory to vigorous and prolonged treatment of all kinds. He then inoculated the arm with pus from the venereal sore, and two typical pustules developed from which the streptobacillus was cultivated. An antiserum was prepared from the streptobacillus and by the second day after the serotherapy was begun, a marked change for the better was evident. The infection was manifestly conquered, after which the extensive sore in the groin rapidly healed.

Ugeskrift for Læger, Copenhagen

April 29, 1920, **82**, No. 18

Ultimate Outcome of Sanatorium Treatment. J. Ostenfeld.—p. 569. Cont'n.
*Pathologic Fluctuations in the Metabolism During Repose. Marie Krogh.—p. 577. Begun in No. 17, p. 537.

Fluctuations in Metabolism During Repose.—Krogh reports extensive study of the influence of the thyroid gland on the metabolism, its exaggeration in exophthalmic goiter and hyperthyroidism in general, and its reduction in myxedema and cretinism. With exophthalmic goiter this increased metabolism should rank beside the three cardinal symptoms of the disease, and in the absence of the latter will clinch the diagnosis in dubious cases, testifying to the pathologically increased production of thyroidin. She tabulates the findings in thirty-four cases under eleven headings, including the respiratory quotient, gaseous interchanges and absorption of oxygen per kilo and minute and square meter of surface, but emphasizes that the absorption of oxygen is the main criterion. This will differentiate in dubious cases myxedema from adiposity, will reveal incipient exophthalmic goiter, and allow supervision of the progress under treatment. In a communication in No. 19, Nordentoft protests that exaggeration of the metabolism cannot be accepted as the criterion for the differential diagnosis of hyperthyroidism, until we find out what influence hyperthymism has on the metabolism.

May 13, 1920, **82**, No. 20

*Chronic Multiple Arthritis. H. Jansen.—p. 627. Conc'd No. 21, p. 655.
Outcome of Sanatorium Treatment of Tuberculosis. J. Ostenfeld. —p. 636. Conc'n.

Chronic Multiple Arthritis.—Jansen classifies chronic arthritis according as rheumatism, traumatic, static and senile causes are responsible; the secondary uric acid polyarthritis, and the primary chronic progressive form which is known variously as multiple arthritis deformans, primary asthenic gout, arthritis nodosa and rheumatoid arthritis. His experience with 333 cases, exclusive of the traumatic and static forms, has demonstrated that with physical measures, heat, diathermy, massage, light baths, hot sand bags, etc., if the patient takes hold with energy and perseverance, far more can be accomplished in treatment than is generally supposed possible. The aim is to heat the joints, not to induce sweating. The joint is moved in the water or light bath, and in order to allow this exercising of the joints, the bath tub is made extra large and the patient sits on a stool in the water, the heat permitting great mobility in these kinetotherapeutic baths as he calls them. It has been his experience that diathermy and roentgen treatment did not accomplish any more than ordinary physical measures and sometimes less. But radium emanations have proved extremely useful in treatment of chronic polyarthritis, both in his hands and in Falta's experience in Vienna. Jansen warns against keeping polyarthritis patients too long in bed; the active mobilizing exercises should be begun even before they are able to get up. He adds that it is a sin to put them in cotton clothing, as is done often in hospitals. Their peripheral circulation is poor and they need woolen, and the rooms should be dry. To encourage the patient is an important element.